Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, and Sierra Pointe Specific Plan Final Environmental Impact Report

Public Hearing Draft

April 2013

OAKDALE 2030 GENERAL PLAN, CLIMATE ACTION PLAN, CRANE CROSSING SPECIFIC PLAN, AND SIERRA POINTE SPECIFIC PLAN

Final Environmental Impact Report

Prepared for
City of Oakdale

April 2013

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1. Urban Water Management Plan

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CHAPTER 1
Introduction

1.1 Overview

The proposed project consists of four components that include the City of Oakdale 2030 General Plan (2030 General Plan); Climate Action Plan (CAP); Crane Crossing Specific Plan (CCSP); and Sierra Pointe Specific Plan (SPSP). This Final Environmental Impact Report (EIR) is for each component of the proposed project and was prepared in compliance with the California Environmental Quality Act (CEQA) and CEQA Guidelines (California Code of Regulations, Title 14). The City of Oakdale is the lead agency for the environmental review of the proposed project and has the principal responsibility for approving the project. As described in the CEQA Guidelines Section 15121(a), an EIR is a public information document that assesses potential environmental effects of a proposed project, and identifies mitigation measures and alternatives to the project that could reduce or avoid adverse environmental impacts. CEQA requires that state and local government agencies consider the environmental consequences of projects over which they have discretionary authority. The EIR is an informational document used in the planning and decision-making process. It is not the purpose of an EIR to recommend either approval or denial of a project.

The procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects" (Public Resources Code Section 21002). As a general rule, "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." However, "in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof (*ibid*.)."

Stated differently, under CEQA, a lead agency must make certain determinations before it can approve or carry out a project if the EIR reveals that the project will result in one or more significant environmental impacts.

The lead agency must "certify" the Final EIR. According to the CEQA Guidelines, "certification" consists of three separate steps. Prior to approving a project, the lead agency shall certify that (1) the Final EIR has been completed in compliance with CEQA; (2) the Final EIR was presented to the decision-making body of the lead agency and that the body has reviewed and considered the information contained in the Final EIR prior to approving the project; and (3) the Final EIR reflects the lead agency's independent judgment and analysis (CEQA Guidelines, Section 15090(a); see also Public Resources Code, Section 21082.1(c)(3)).

Before approving a project for which a certified Final EIR has identified significant environmental effects, the lead agency must make one or more specific written findings for each of the identified significant impacts. These findings include and are limited to the following:

1. Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant environmental effect as identified in the Final EIR.
2. Such changes or alternations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
3. Specific economic, legal, social, technological or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final EIR (CEQA Guidelines, Section 15091(a)).

If there remain significant environmental effects even with the adoption of all feasible mitigation measures or alternatives, the agency must adopt a "statement of overriding considerations" before it can proceed with the project. The statement of overriding consideration must be supported by substantial evidence in the record (CEQA Guidelines, Sections 15092 and 15093).

These overriding considerations include the economic, legal, social, technological, or other benefits of the proposed project. The lead agency must balance these potential benefits against the project's unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the lead agency may consider the adverse environmental impacts to be "acceptable" (CEQA Guidelines, Section 15093(a)). These benefits should be set forth in the statement of overriding considerations, and may be based on the Final EIR and/or other information in the record of proceedings (CEQA Guidelines, Section 15093(b)).

Notably, the California Supreme Court, reflecting on this multi-step process for considering project impacts and benefits, has stated that, "[t]he wisdom of approving any development project, a delicate task which requires a balancing of interests, is necessarily left to the sound discretion of the local officials and their constituents who are responsible for such decisions. The law as we interpret and apply it simply requires that those decisions be informed, and therefore balanced" (see *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576).

1.2 EIR Process

1.2.1 Scoping Process

Prior to the release of the DEIR, the City of Oakdale (Lead Agency) issued a Notice of Preparation (NOP) for a 30-day comment period between August 19, 2011 and September 19, 2011. The NOP was distributed in particular to governmental agencies, organizations, and persons interested in the proposed project. The City sent the NOP to agencies with statutory responsibilities in connection with the proposed project with the request for their input on the scope and content of the environmental information that should be addressed in the EIR. In addition, the City held a public scoping meeting at the Gene Bianchi Community Center on September 15, 2011 in order

to take comments regarding the scope of the EIR in response to the NOP. The environmental issues raised during the scoping process were considered in the Draft EIR.

1.2.2 Draft EIR Review

The Draft EIR was released on July 25, 2012 for a 45-day public review period. The review period closed on September 17, 2012. Sixteen (16) written comment letters were received during the review period, and two letters were received after. These comments are included in their entirety in Chapter 2 of this Final EIR.

1.2.3 Final EIR

The CEQA Guidelines (Section 15132) specify that the Final EIR shall consist of:

a. The Draft EIR or a revision of the draft.

b. Comments and recommendations received on the Draft EIR either verbatim or in summary.

c. A list of persons, organizations, and public agencies commenting on the Draft EIR.

d. The responses of the lead agency to significant environmental points raised in the review and consultation process.

e. Any other information added by the lead agency.

After review of the Final EIR, the City of Oakdale staff will make a recommendation to the City Council and Planning Commission at a public hearing on whether to approve the proposed project and certify the EIR. The City Planning Commission will then review the project, the Final EIR, and public testimony prior to making a recommendation to the City Council on whether to approve the project and certify the EIR. Finally, the Oakdale City Council will review the project, the Final EIR, Planning Commission recommendation and public testimony prior to deciding whether to certify the EIR and approve the project.

1.3 Organization of the Document

The Final EIR is organized into six chapters. Chapter 1 provides an overview of the CEQA process and the Final EIR. Chapter 2 provides the comments on the Draft EIR received during the review period. Chapter 3 provides the Lead Agency's responses to the comments in Chapter 2. Chapter 4 includes corrections and additions to the Draft EIR text as a result of comments made on the Draft EIR. Chapter 5 includes the Mitigation and Monitoring Reporting Plan for the Oakdale 2030 General Plan and the CAP. Chapter 6 contains the Mitigation and Monitoring Plan for the CCSP, while Chapter 7 includes the Mitigation and Monitoring Plan for the SPSP. Chapter 8 contains a list of preparers of the Final EIR. The Draft EIR (July 2012) is considered part of the Final EIR, as amended in Chapter 4 of this document.

CHAPTER 2
Comments on the Draft Environmental Impact Report

2.1 Introduction

This chapter includes comments on the Draft EIR received during the public comment period (see Chapter 1 for more detail).

2.2 List of Commenters

Table 2-1 provides a list of comments received. Comment letters are reproduced in Section 2.3 below and are identified by the number code shown in the table below.

TABLE 2-1
PERSONS AND AGENCIES COMMENTING ON THE DRAFT EIR

Commenter	Date Received	Letter Code
Public Agencies – State Agencies		
California Department of Conservation	September 20, 2012	A1
California Department of Transportation	September 7, 2012	A2
Central Valley Regional Water Quality Control Board	September 5, 2012	A3
Governor's Office of Planning and Research	September 12, 2012	A4
Native American Heritage Commission	July 31, 2012	A5
Public Agencies – Regional and Local Agencies		
Modesto Irrigation District	September 11, 2012	A6
Oakdale Irrigation District	September 28, 2012	A7
San Joaquin Valley Air Pollution Control District	September 17, 2012	A8
Stanislaus County Local Agency Formation Commission	September 14, 2012	A9
Individuals		
Bill and Joy Bloomingcamp	September 14, 2012	I1
Mark Niskanen on behalf of John P. Brichetto	September 21, 2012	I2
Brewster Burns	September 4, 2012	I3
Cheryl Folla	September 7, 2012	I4
James D. Godkin	September 16, 2012	I5
Vicki C. Godkin	September 15, 2012	I6
Robert and Judith Moore	September 17, 2012	I7
EE Waggoner	September 5, 2012	I8
Private Citizen	August 27, 2012	I9

2.3 Comments

Comments received on the DEIR are presented on the following pages. Each letter is presented in its original format and listed with a letter and number to identify individual comments. Responses to comments are provided in Chapter 3.

NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

September 20, 2012

Mr. George Osner
City of Oakdale
120 South Sierra Avenue
Oakdale, CA 95361

Subject: Draft Environmental Impact Report (DEIR) for the City of Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing & Sierra Pointe Specific Plans – SCH # 2011082051

Dear Mr. Osner:

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the DEIR for the City of Oakdale 2030 General Plan and Specific Plans Project (project). The Division monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act and other agricultural land conservation programs. We offer the following comments and recommendations with respect to the proposed project's potential impacts on agricultural land and resources.

Project Description

A1-1

The proposed project consists of four components. One is a comprehensive update and implementation of the City of Oakdale General Plan consisting of long-term policies and planning strategies. The planning area for Oakdale encompasses the corporate city limits as well as portions of the County of Stanislaus' unincorporated land within the City's Sphere of Influence and some lands adjacent to the Sphere of Influence, all located in eastern Stanislaus County. The second component, the Crane Crossing Specific Plan, would provide approximately 1,039 residential units and 710,000 square feet of non-residential space, including retail commercial, institutional and industrial space, and would also include 13.8 acres of parkland and 4.8 acres of open space. The Sierra Pointe Specific Plan would provide approximately 901 residential units and 1,100,000 square feet of non-residential space, including retail commercial, institutional and educational space. The Sierra Pointe Plan would also include 12.59 acres of parkland and 4.7 acres of open space. The Climate Action Plan component will not be reviewed in this letter.

Development of the Oakdale 2030 General Plan within the proposed study area will result in the loss of 1,623.9 acres of farmland. In addition, build-out of the two Specific Plans will result in the loss of 264.47 acres of farmland, which has been historically cultivated for orchards and other agricultural uses. Implementation of the proposed project would convert this farmland to urban uses and would preclude future agricultural uses on the site. The project currently has 3,518.9 acres under Williamson Act contract within the planning area.

Division Comments

A1-1 cont.

Per the 2010 Stanislaus Farmland Mapping and Monitoring Program (FMMP) Map, the entire project site contains a combination of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland designations. The conversion of this farmland is a material consideration for the California Environmental Quality Act (CEQA). Therefore, the Division recommends that the DEIR address the following items to provide a comprehensive discussion of potential impacts of the project on agricultural land and activities:

General Plan Update Impacts on Agricultural Land

A1-2

Land use conversion statistics from the Important Farmland Data Availability webpage[1] shows that Stanislaus County lost a total of 6,823 acres of Important Farmland from 1984 to 2010, with an annual average loss of 1,137 acres per year. This cumulative loss represents a significant and permanent impact to the agricultural resources of the County and the State, and shows why the remaining agricultural resources should be protected whenever feasible. In 2010, approximately $2,572,433,000 in farm sales was generated in Stanislaus County[2], which demonstrates the significance of agriculture to the economy of the region. The project proposes changes to many large areas of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Any loss of this agricultural land should be avoided or mitigated whenever possible.

When determining the agricultural value of the land, it is important to recognize that the value of a property may have been reduced over the years due to inactivity, but it does not mean that there is no longer any agricultural value. The inability to use the land for agriculture, rather than the choice not to do so, is what could constitute a reduced agricultural value. The Department urges the City to carefully consider this project and its permanent removal of prime, productive agricultural lands, especially if the project may not be urgently needed for the local economy and the City's growth.

Under California Code of Regulations § 15064.7, impacts on agricultural resources may also be both quantified and qualified by use of established thresholds of significance. As such, the Division has developed a California version of the USDA Land Evaluation and Site Assessment (LESA) Model. The California LESA model is a semi-quantitative rating system for establishing the environmental significance of project-specific impacts on farmland. The model may also be used to rate the relative value of alternative project sites. The LESA Model is available on the Division's website at:

http://www.consrv.ca.gov/DLRP/qh_lesa.htm

[1] http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp
[2] California Agricultural Resource Directory 2010-2011
http://www.cdfa.ca.gov/statistics/PDFs/ResourceDirectory_2010-2011.pdf

Mitigation

A1-3

Although direct conversion of agricultural land may be an unavoidable impact under CEQA analysis, mitigation measures, including compensatory mitigation, must be considered and adopted if feasible.

The DEIR provides for a framework for the Crane Crossing and Sierra Pointe Crossing Specific Plans. This program for off-setting potential impacts, however, is discussed in the document under "Impact Analysis", and the actions set within are not phrased explicitly as mitigation measures[3]. The document does not provide any mitigation measures under the appropriate heading, and the resulting impacts are considered significant and unavoidable[4]. The Department would like to remind the City that an agency cannot approve a project if the EIR identifies significant environmental effects unless the agency finds that (1) mitigation measures required in or incorporated into the project will avoid or substantially lessen the significant effects (Public Resources Code § 21081) (emphasis added)[5]. However, the Department notes that this may be remedied by re-classifying the elements of the proposed "frameworks" as mitigation measures, and moving them to the appropriate section. The lead agency will then include these actions in the Specific Plan approvals, including selecting from a suite of conservation mechanisms and ensuring that developed land is no longer under a Williamson Act contract.

Although the DEIR declares the current agricultural impacts to be significant and unavoidable, the aforementioned change to the Land Use and Agricultural Resources Section could reduce the impacts to a less-than-significant level. The Department wishes to note that reduction to a level of "no significance" is not a criterion for mitigation. Rather, the criterion is feasible mitigation that lessens a project's impacts. Pursuant to CEQA Guideline § 15370, mitigation includes measures that "avoid, minimize, rectify, reduce or eliminate, or compensate" for the impact.

A1-4

All potentially feasible mitigation measures which could lessen a project's impacts should be included in the DEIR. A measure brought to the attention of the Lead Agency should not be left out unless it is infeasible based on its elements. Because agricultural conservation easements have become more widely used by jurisdictions at the local and state level, they are an available mitigation tool that should be considered in the CEQA process. The Department re-states its recommendation that the elements present in the Crane Crossing and Sierra Pointe Crossing Specific Plan frameworks should be moved to the "Mitigation Measures" section, which will allow for several conservation easement procedures.

The Department considers agricultural easements on existing farmland to be a viable, if not favored, mitigation mechanism. This is because their purpose is not to create new farmland, but rather because they protect the remaining agricultural resources from future impacts, thus

[3] Oakdale GP, CAP, CCSP & SPSP Draft Environmental Impact Report. ESA / 211782, July 2012. Pages 4.1-35 and 4.1-37.
[4] *Id.* at page 4.1-36.
[5] *See* Federation of Hillside and Canyon Associations v. City of Los Angeles, 83 Cal. App. 4th 1252, 1259-1261 (2000).

providing the public with an insured benefit to compensate for the current loss. The land in the vicinity could be a high priority for a conservation easement to control and direct future non-agricultural land uses. A1-4 cont.

The loss of agricultural land represents a permanent reduction in the State's agricultural land resources. As such, the Department recommends the use of permanent agricultural conservation easements on land of at least equal quality and size as compensation for the direct loss of agricultural land. Conservation easements will protect a portion of those remaining land resources and lessen project impacts in accordance with CEQA Guideline § 15370. The Department highlights this measure because of its acceptance and use by lead agencies as an appropriate mitigation measure under CEQA.

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands need not be limited strictly to lands within the project's surrounding area, but should be roughly equivalent in proximity, acreage, and agricultural characteristics to the affected property. These recommendations may be already considered in the frameworks for the two Specific Plans, and therefore would be met should the City convert the framework elements into mitigation measures.

One source that has proven helpful for regional and statewide land conservation is the California Council of Land Trusts (CCLT), which deals with all types of conservation easements. CCLT may provide the County with information regarding the mechanisms and fees associated with conservation easements, and with referrals to local land trusts. CCLT's web site is:

http://www.calandtrusts.org

Another source is the Division's California Farmland Conservancy Program (CFCP), which has worked with CCLT and other partners to secure conservation easements throughout the State of California. CFCP's web site is:

http://www.conservation.ca.gov/DLRP/CFCP/Pages/Index.aspx

The establishment of an easement in Stanislaus County is potentially feasible. If the City were not able to make arrangements for easement mitigation through one of these or many other land trusts operating in California, the Department could be of assistance.

Thank you for giving us the opportunity to comment on the DEIR for the City of Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing & Sierra Pointe Specific Plans. Please provide this Department with the date of any hearings for this particular action, and any staff reports pertaining to it. If you have questions regarding our comments, or require technical A1-5

assistance or information on agricultural land conservation, please contact Meri Meraz, Associate Environmental Planner, at 801 K Street, MS 18-01, Sacramento, California 95814, or by phone at (916) 445-9411.

A1-5 cont.

Sincerely,

John M. Lowrie, Assistant Director (Acting)
Division of Land Resource Protection

cc: State Clearinghouse

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY JERRY BROWN, Governor

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 STOCKTON, CA 95201
(1976 E. DR. MARTIN LUTHER KING JR. BLVD. 95205)
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And Sierra Pointe Specific Plans
State Clearinghouse No. 2011082051

Clear
9/7/12
C

Mr. George Osner
City of Oakdale
Community Development Department
120 South Sierra Avenue
Oakdale, CA 95361

Dear Mr. Osner:

A2-1

The California Department of Transportation (Caltrans) appreciates the opportunity to review and comment on the Draft Environmental Impact Report (DEIR) for the City of Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing, and Sierra Pointe Specific Plans. The City of Oakdale is located at the base of the foothills of the Sierra Nevada Mountains in eastern Stanislaus County, California. Oakdale is approximately 15 miles northeast of Modesto and 30 miles southeast of Stockton. Other smaller cities surrounding Oakdale include Escalon (9 miles northwest), and Ceres (18 miles southwest).

- Depending on the type of proposed future developments and the estimated traffic generations, a Traffic Impact Studies may need to be required on a case by case basis to determine the potentially significant impacts and mitigations to State Routes 108 and/or 120. Please refer to the "Guide for the Preparation of Traffic Impact Studies" developed by Caltrans, in order to determine impacts and mitigations to the affected SHS.

- Caltrans has responsibility for the maintenance and operation of State and Interstate highways within California. Any proposals that would affect the State Highway System are of concern to the Department. This proposal could impact State Route 108 and/or 120 with the potential to impact the operations and maintenance of the State Highway and Federal Interstate Systems within Central California. Comment on operations and maintenance impacts are deferred to Planning and Traffic Operations.

- This proposal would encroach into Caltrans right of way, requiring issuance of Encroachment Permits by Caltrans. As defined in CEQA section 21069, Caltrans would act as a Responsible Agency for projects requiring an Encroachment Permit. An application for an Encroachment Permit must include appropriate environmental studies and a copy of the environmental document adopted by the Lead Agency. These documents should identify Caltrans as a Responsible Agency and should include an analysis of impacts to cultural resources, biological resources, hazardous waste locations, and other resources mentioned above, within Caltrans right of way. Appropriate avoidance, minimization, and mitigation measures must be identified.

A2-1 cont.

If you have any questions, please contact Janet P. Jaramillo at (209) 942-6022 (email: jjaramil@dot.ca.gov) or me at (209) 941-1921. We look forward to continuing to work with you in a cooperative manner.

Sincerely,

Janet P. Jaramillo

-for- TOM DUMAS, Chief
Office of Metropolitan Planning

c: Scott Morgan, State Clearinghouse

California Water Boards

Central Valley Regional Water Quality Control Board

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Edmund G. Brown Jr.
GOVERNOR

Matthew Rodriguez
SECRETARY FOR
ENVIRONMENTAL PROTECTION

27 August 2012

George Osner
City of Oakdale
120 South Sierra Avenue
Oakdale, CA 95361

CERTIFIED MAIL
7011 2970 0003 8939 1965

COMMENTS TO THE DRAFT ENVIRONMENTAL IMPACT REPORT, OAKDALE 2030 GENERAL PLAN, CLIMATE ACTION PLAN, CRANE CROSSING SPECIFIC PLAN, AND SIERRA POINTE SPECIFIC PLAN PROJECT, SCH NO. 2011082051, STANISLAUS COUNTY

Pursuant to the State Clearinghouse's 25 July 2012 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Draft Environmental Impact Report* for the Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, and Sierra Point Specific Plan Project, located in Stanislaus County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). A3-1

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

A3-1 cont.

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit, or any other federal permit, is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Waste Discharge Requirements

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

A3-1 cont.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

If you have questions regarding these comments, please contact me at (916) 464-4684 or tcleak@waterboards.ca.gov.

Trevor Cleak
Environmental Scientist

cc: State Clearinghouse Unit, Governor's Office of Planning and Research, Sacramento

Letter A4

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BY:

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

September 11, 2012

George Osner
City of Oakdale
120 South Sierra Avenue
Oakdale, CA 95361

Subject: Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, & Sierra Pointe Specific Plan
SCH#: 2011082051

Dear George Osner:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on September 7, 2012, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly. A4-1

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2011082051
Project Title Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, & Sierra Pointe Specific Plan
Lead Agency Oakdale, City of

Type EIR Draft EIR

Description The proposed project consists of four components: (1) the City of Oakdale 2030 General Plan, (2) a Climate Action Plan for the City of Oakdale, (3) the Crane Crossing Specific Plan, and (4) the Sierra Pointe Specific Plan. The 2030 General Plan outlines the City's long term public policies and sets guidelines for the use of the public and private lands within the City, the City's Sphere of Influence, and some areas adjacent to the City's Sphere of Influence.

Lead Agency Contact

Name George Osner
Agency City of Oakdale
Phone 209 845 3625 **Fax**
email
Address 120 South Sierra Avenue
City Oakdale **State** CA **Zip** 95361

Project Location

County Stanislaus
City Oakdale
Region
Lat / Long 37° 46' 9" N / 120° 51' 25" W
Cross Streets
Parcel No. Various
Township **Range** **Section** **Base**

Proximity to:

Highways SR 120, 108
Airports Oakdale Municipal
Railways BNSF, UPRR, OTC, Sierra RR
Waterways Stanislaus River
Schools Several
Land Use Agriculture, Residential, Commercial, Industrial, Public, Semi-Public, Parkland

Project Issues Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Minerals; Noise; Public Services; Recreation/Parks; Septic System; Sewer Capacity; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Water Quality; Water Supply; Wetland/Riparian; Growth Inducing; Landuse; Cumulative Effects; Other Issues; Aesthetic/Visual; Economics/Jobs

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Game, Region 4; Office of Historic Preservation; Department of Parks and Recreation; Office of Emergency Management Agency, California; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 10; Department of Housing and Community Development; Air Resources Board, Transportation Projects; Regional Water Quality Control Bd., Region 5 (Sacramento); Native American Heritage Commission; Public Utilities Commission; State Lands Commission

Date Received 07/25/2012 **Start of Review** 07/25/2012 **End of Review** 09/07/2012

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

RECEIVED
JUL 3 1 2012

July 27, 2012

Mr. George Osner
City of Oakdale
120 South Sierra Avenue
Oakdale, CA 95361

Re: SCH#2011082051; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the **Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan & Sierra Pointe Specific Plan Project;** located in the City of Oakdale; Stanislaus County, California.

Dear Mr. Osner:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources pursuant to California Public Resources Code §21070 and affirmed by the Third Appellate Court in the case of EPIC v. Johnson (1985: 170 Cal App. 3rd 604).

This letter includes state and federal statutes relating to Native American historic properties or resources of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9. This project is also subject to California Government Code Section 65352.3 *et seq.*

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. The NAHC recommends that the lead agency request that the NAHC do a Sacred Lands File search as part of the careful planning for the proposed project. A5-1

The NAHC "Sacred Sites,' as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254 (r).

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We strongly urge that you make contact with the list of Native American Contacts on the attached list of Native American contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Pursuant to CA Public Resources Code § 5097.95, the NAHC requests cooperation from other public agencies in order that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties, including archaeological studies. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources. A5-2

Furthermore, the NAHC if the proposed project is under the jurisdiction of the statutes and regulations of the National Environmental Policy Act (e.g. NEPA; 42 U.S.C. 4321-43351). Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.' A5-3

Confidentiality of "historic properties of religious and cultural significance" should also be considered as protected by California Government Code §6254(r) and may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity. A5-4

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for inadvertent discovery of human remains mandate the processes to be followed in the event of a discovery of human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

Finally, when Native American cultural sites and/or Native American burial sites are prevalent within the project site, the NAHC recommends 'avoidance' of the site as referenced by CEQA Guidelines Section 15370(a). A5-4 cont.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List

Native American Contact
Stanislaus County
July 27, 2012

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville , CA 93258
chairman@tulerivertribe-nsn.
(559) 781-4271
(559) 781-4610 FAX
Yokuts

Southern Sierra Miwuk Nation
Anthony Brochini, Chairperson
P.O. Box 1200
Mariposa , CA 95338
tony_brochini@nps.gov
209-379-1008
209-628-0085 cell
Miwok
Pauite
Northern Valley Yokut

Buena Vista Rancheria
Rhonda Morningstar Pope, Chairperson
1418 20th Street, Suite 200
Sacramento , CA 95811
rhonda@buenavistatribe.
916 491-0011
916 491-0012 - fax
Me-Wuk / Miwok

Tuolumne Band of Me-Wuk
Kevin Day, Chairperson
P.O. Box 699
Tuolumne , CA 95379
receptionist@mlode.com
(209) 928-3475 - Tribal Office
(209) 928-1677 - Fax
Me-Wuk - Miwok

California Valley Miwok Tribe
Silvia Burley, Chairperson
10601 N Escondido PL
Stockton , CA 95212
office@cvmt.net
209-931-4567
209-931-4333
Miwok

Tuolumne Band of Me-Wuk
Mary Camp, Tribal Administrator
P.O. Box 699
Tuolumne , CA 95379
receptionist@mlode.com
(209) 928-3475 - Tribal Office
(209) 928-1677 - Fax
Me-Wuk - Miwok

North Valley Yokuts Tribe
Katherine Erolinda Perez
PO Box 717
Linden , CA 95236
(209) 887-3415
canutes@verizon.net
Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Southern Sierra Miwuk Nation
Les James, Spiritual Leader
PO Box 1200
Mariposa , CA 95338
209-966-3690
Miwok
Pauite
Northern Valley Yokut

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2011082051; CEQA Notice of Completion; Oakdale 2030 General Plan, Oakdale Climate Action Plan, Crane Crossing Specific Plan and Sierra Pointe Specific Plan; located in the City of Oakdale; Stansilaus County, California.

Native American Contact
Stanislaus County
July 27, 2012

Tuolumne Band of Me-Wuk
Stanley Cox, Cultural Resources Dr
P.O. Box 699 Me-Wuk - Miwok
Tuolumne , CA 95379
receptionist@mlode.com
(209) 928-3475 - Tribal Office
(209) 928-1677 - Fax

Tuolumne Band of Me-Wuk
Reba Fuller
P.O. Box 699 Me-Wuk - Miwok
Tuolumne , CA 95379
rfuller@mlode.com
(209) 928-3475 - Tribal Office
(209) 928-1677 - Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2011082051; CEQA Notice of Completion; Oakdale 2030 General Plan, Oakdale Climate Action Plan, Crane Crossing Specific Plan and Sierra Pointe Specific Plan; located in the City of Oakdale; Stansilaus County, California.

Letter A6

Modesto Irrigation District
Water and Power

1231 Eleventh St.
P.O. Box 4060
Modesto, CA 95352
(209) 526-7373

RECEIVED
SEP 11 2012
BY:

September 6, 2012

City of Oakdale
Attention: George Osner, Consulting Planner
Community Development Department
120 South Sierra Ave.
Oakdale, CA 95361

RE: Notice of Completion (NOC) for the Draft Environmental Impact Report (DEIR) for the of Oakdale 2030 General Plan Update/Crane Crossing and Sierra Pointe Specific Plans and Climate Action Plan (CAP)
Location: Various surroundings areas near the City of Oakdale

Dear Mr. Osner:

Thank you for allowing the District to comment on this referral. Following are the recommendations from our Electrical, Irrigation and Domestic Water Divisions:

DRAFT EIR 2030 General Plan Update

Irrigation

- *Section PF-3 Stormwater* states in subsection PF-3.6 *Discharge to OID Infrastructure* to "Consider alternate solutions in areas where stormwater is currently discharged into Oakdale Irrigation District infrastructure". A6-1

- Several OID canals eventually discharge into the Modesto Irrigation District (MID) main canal southwest of the City of Oakdale. While MID supports the recommendation in subsection FP-3.6 that projects consider alternatives to discharging into OID facilities, any project proposing to discharge storm water into OID facilities that ultimately discharge into the MID canal system must be reviewed and approved by MID for compliance with the limits of a 1942 discharge agreement with OID as well as the Clean Water Act.

Domestic Water A6-2

- No comments at this time.

Electrical

- In conjunction with related improvement requirements, existing overhead and underground electric facilities within or adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department. Appropriate easements for electric facilities shall be granted as required. Extension, reconstruction, relocation or removal of existing facilities will be specifically addressed when improvement plans are submitted for individual development. A6-3

- Relocation or Installation of electric facilities shall conform to the District's Electric Service Rules. A6-3 cont.
- Costs for relocation and/or undergrounding the District's facilities at the request of others will be borne by the requesting party. Estimates for relocating or undergrounding existing facilities will be supplied upon request.
- At any location where additional road Right-of-Way is required and MID overhead primary lines exist, a 15' PUE is required along all properties that are adjacent to the new road Right-of-Way dedication. These easements are necessary in order to protect the overhead electric facilities and maintain necessary safety clearances.
- A 10' PUE is required along all proposed street frontages.

Crane Crossing Specific Plan (CCSP)

Irrigation/ Domestic Water A6-4

- No comments at this time.

Electrical A6-5

- The District's Electric Engineering Department has no specific comments at this time.
- In conjunction with related improvement requirements, existing overhead and underground electric facilities within or adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department. Appropriate easements for electric facilities shall be granted as required. Extension, reconstruction, relocation or removal of existing facilities will be specifically addressed when improvement plans are submitted for development.

Sierra Pointe Specific Plan (SPSP)

Irrigation/ Domestic Water A6-6

- No comments at this time.

Electrical A6-7

- The District's Electric Engineering Department has no specific comments at this time.
- In conjunction with related improvement requirements, existing overhead and underground electric facilities within or adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department. Appropriate easements for electric facilities shall be granted as required. Extension, reconstruction, relocation or removal of existing facilities will be specifically addressed when improvement plans are submitted for development.

Climate Action Plan (CAP)

Irrigation/ Domestic Water A6-8

- No comments at this time.

Electrical A6-9

- The District's Electric Engineering Department has no specific comments at this time. Proposed projects will be specifically addressed when improvement plans are submitted for development.

The Modesto Irrigation District reserves its future rights to utilize its property, including its canal and electrical easements and rights-of-way, in a manner it deems necessary for the installation and maintenance of electric, irrigation, agricultural and urban drainage, domestic water and telecommunication facilities. These needs, which have not yet been determined, may consist of poles, crossarms, wires, cables, braces, insulators, transformers, service lines, open channels, pipelines, control structures and any necessary appurtenances, as may, in District's opinion, be necessary or desirable.

If you have any questions, please contact me at 526-7433.

Sincerely,

Celia Aceves
Risk & Property Analyst

Xc: File

OAKDALE IRRIGATION DISTRICT

September 28, 2012

Mr. George Osner
City of Oakdale
Community Development Department
120 South Sierra Avenue
Oakdale, CA 95361

Re: City of Oakdale General Plan Update, Crane Crossing and Sierra Pointe Specific Plans and Climate Action Plan Draft EIR

Dear Mr. Osner:

Oakdale Irrigation District (OID) appreciates the opportunity to comment on the above noted series of documents and offers the following items for your consideration.

A7-1

- Please be advised that the low topography of the area in and around each of the project areas channels significant amounts of storm water and OID is not responsible for channeling, diverting nor conveying any storm drainage resulting therefrom. Of specific concern to OID are those planned improvements or impacts to Adams Creek.

- A pre and post development hydrologic analysis shall be required from the City or a project proponent to support proposed actions concerning storm water discharges to OID facilities.

- Irrigation service shall not be interrupted during development of the project areas.

- Relocation of OID facilities to the benefit of the development must be coordinated and approved by OID. OID facilities shall not be installed within roadways or other potential alignments which will impose an added financial burden on our constituents related to future replacement and or operation.

- Any and all costs associated with facility relocation shall be the responsibility of the City or project proponent. The proposed facility relocations and potential facility abandonments noted herein are hypothetical and have not been approved by OID. Final approval by OID is subject to review of project specific improvement drawings.

1205 East F Street / Oakdale, CA 95361 / (209) 847-0341 / Fax (209) 847-3468
www.oakdaleirrigation.com

A7-1 cont.

- Construction on existing OID facilities shall not occur during the irrigation season. Construction shall be in accordance with both OID policy and OID's Standard Construction Details.

- Many OID facilities convey storm water during the non-irrigation season and provisions shall be made for the conveyance of storm water during the winter season. Any and all costs associated with temporary storm water bypass shall be the responsibility of the City or project proponent.

- OID is currently the trustee for Improvement District #21 located within the Sierra Pointe Specific Planning Area, providing the Twildo Avenue community with a potable water source. Once annexed into the City, OID will no longer act as the trustee and will relinquish to the City all responsibility for the community's domestic water system.

- No encroachments will be allowed within existing or proposed easements or rights-of-way.

- OID requires a Developer Agreement before any work can be done on OID facilities. Developer Agreements require a retainer for staff time and additional related costs reasonably incurred by OID.

In conclusion and as discussed above, OID is not interested in a piecemeal solution that may work for one specific project but not the entirety of the planning area. OID's intent is to work cooperatively with the City and all landowners, however, we cannot allow development to occur at the expense or forfeiture of any OID or constituent rights. To that end, we encourage active dialogue between all parties as specific projects unfold through either continued environmental review or review of project specific improvement plans. Further, OID reserves the right to provide additional comments on specific projects and subsequent improvement plans as they become available.

Should you have any additional questions or wish to discuss the content of this correspondence in more detail, please feel free to contact me at (209) 840-5537.

Sincerely,

OAKDALE IRRIGATION DISTRICT

John B. Davids, P.E.
District Engineer

cc: Administration Files
Eric C. Thorburn, P.E., Water Operations Manager
Jason Jones, Support Services Manager

K:\Engineering\John Davids\Letters\Final City Of Oakdale Specific Plan And General Plan Comments 9-27-12.Docx

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

September 17, 2012

George Osner
City of Oakdale
Community Development
120 S. Sierra Avenue
Oakdale, CA 95361

Project: City of Oakdale 2030 General Plan Update / Crane Crossing and Sierra Pointe Specific Plans and Climate Action Plan (SCH #2011082051)

District Reference No: 20120451

Dear Mr. Osner:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Draft Environmental Impact Report (EIR) for the City of Oakdale 2030 General Plan Update. At full buildout, the General Plan would include an estimated population of 42,954 residents, supported by approximately 15,563 residential units and 18 million square feet on non-residential land uses.

The District offers the following comments regarding the 2030 General Plan:

1. Nearly all development projects within the San Joaquin Valley Air Basin, from general plans to individual development projects have the potential to generate air pollutants, making it more difficult to attain state and federal ambient air quality standards. Land use decisions are critical to improving air quality within the San Joaquin Valley Air Basin because land use patterns greatly influence transportation needs and motor vehicle emissions are the largest source of air pollution. The General Plan includes many land use and transportation policies and implementation measures, such as development guidelines to reduce urban sprawl and vehicle miles travelled, which have a proven benefit for air quality. The District greatly appreciates the City's efforts to make land use decisions that encourage smart growth and reduces impacts on air quality as a result of future growth and development. A8-1

2. Policies LU-8.5, LU-8.6, NR-3.1, and NR-3.5 require City planning activities to be coordinated with the District and other affected or responsible government agencies A8-2

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

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while Policy NR-3.4 requires new developments to incorporate emission reducing measures and/or offset impacts consistent with District requirements. The District appreciates the City's ongoing commitment to working with the District and appreciates the City's assistance in promoting compliance with District programs, rules and regulations. The District looks forward to the opportunity to aid the City in identifying and mitigating impacts on air quality. To aid in the City in their coordination efforts, the District offers the following recommendations: A8-2 cont.

- To reduce City staff time in responding to applicant inquiries regarding District programs and processes, such as Indirect Source Review (ISR), eTRIP, dust control, permitting, etc., the District recommends that all referral documents include applicant contact information. District receipt of the applicant information will allow District staff to contact developers directly and assist them in understanding how to reduce project related impacts on air quality and how to complete the appropriate application process.

- Referral documents should include a project summary detailing, at a minimum, the land use designation, project size, and proximity to sensitive receptors and existing emission sources.

- Referral documents should be submitted to the District's Technical Services Department, CEQA Division located at the District's Central Office. To minimize paper consumption and help expedite project review, the District recommends that referrals be submitted via e-mail at CEQA@valleyair.org.

The District offers the following comments regarding the Crane Crossing and Sierra Pointe Specific Plans: A8-3

3. District Rule 9510 is intended to mitigate a project's impact on air quality through project design elements or by payment of applicable off-site mitigation fees. Any applicant subject to District Rule 9510 is required to submit an Air Impact Assessment (AIA) application to the District no later than applying for final discretionary approval, and to pay any applicable off-site mitigation fees before issuance of the first building permit.

   Specific plans provide guidance for land use development within the plan area and establish the area's zoning designations, development standards, and allowed uses. It is the District's experience that the adoption of a specific plan may constitute the final discretionary approval for certain development projects within the scope of the plan. As such, any future development allowed by right in the project area, and exceeding the applicability thresholds identified below, would be subject to District Rule 9510 (Indirect Source Review).

   - 50 dwelling units
   - 2,000 square feet of commercial space;
   - 25,000 square feet of light industrial space;

- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space; or
- 9,000 square feet of educational space; or
- 10,000 square feet of government space; or
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

A8-3 cont.

As future developments within the scope of the specific plans are identified, the District recommends that demonstration of compliance with District Rule 9510, including payment of all applicable fees before issuance of the first building permit, be made a condition of project approval. Information about how to comply with District Rule 9510 can be found online at http://www.valleyair.org/ISR/ISRHome.htm.

If you have any questions or require further information, please call Jessica Willis at (559) 230-5818.

Sincerely,

David Warner
Director of Permit Services

Jessica R. Willis for

Arnaud Marjollet
Permit Services Manager

DW:jw

Stanislaus LAFCO
LOCAL AGENCY FORMATION COMMISSION

1010 TENTH STREET, 3RD FLOOR
MODESTO, CA 95354

PHONE: (209) 525-7660
FAX: (209) 525-7643
www.stanislauslafco.org

September 14, 2012

George Osner, Consulting Planner
City of Oakdale
455 S. Fifth Street
Oakdale, CA 95361

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT – OAKDALE 2030 GENERAL PLAN, CLIMATE ACTION PLAN, CRANE CROSSING SPECIFIC PLAN, AND SIERRA POINT SPECIFIC PLAN

Dear Mr. Osner:

Thank you for the opportunity to review and comment on the City of Oakdale's Draft Environmental Impact Report (DEIR) for the City's 2030 General Plan, Climate Action Plan, and two specific plans. LAFCO policy encourages cities and the County to adopt general plans, policies, and agreements which protect farmland outside urban boundaries, encourage compact and efficient growth, and avoid unnecessary conversion of farmlands. The following comments are provided for the City's consideration:

Sphere of Influence Policies

A9-1

The City's proposed 2030 General Plan includes an area identified as "Future Sphere of Influence" that includes over 3,700 acres outside of the current LAFCO-adopted Sphere of Influence (SOI). Government Code Section 56076 defines a sphere of influence as "a plan for the probable physical boundaries and service area of a local agency, as determined by the commission." Stanislaus LAFCO's adopted Policies and Procedures further define a sphere of influence as representing a twenty-year growth period for the agency. LAFCO also adopts a shorter term growth area within this boundary, known as a "primary area" representing that territory eligible for annexation and extension of services within a zero to ten-year time period. Additionally, LAFCO's adopted policies for sphere of influence expansions state:

> *Territory not in need of urban services, including open space, agriculture, non-protested or protested and not upheld Williamson Act contracted lands, shall not be assigned to an agency's sphere of influence, unless the area's exclusion would impede planned, orderly and efficient development of this area.*

It is noted majority of acreage within the City's proposed "Future Sphere of Influence" are also designated as Agriculture on the City's 2030 General Plan.

"Areas of Concern"

A9-2

The City has noted in previous correspondence with LAFCO that it is concerned with development (other than agricultural uses) in the unincorporated areas just outside its Sphere of Influence and has indicated interest in mechanisms to preclude such development. It is not uncommon for a city to propose a sphere of influence that may be larger than the 20-year

timeframe of a sphere of influence and/or their foreseeable development plans due to concerns regarding potential competing development in the unincorporated areas near the city's boundary. A9-2 cont.

For a "Study Area" (e.g. the North County Corridor Overlay area), which may not have a definite boundary or timeframe, LAFCO encourages the City consider designating the acreage as an "Area of Concern". An "Area of Concern" is defined in LAFCO policy as a geographic area beyond the Sphere of Influence in which land use decisions or other governmental actions of one local agency (the "Acting Agency") impact directly or indirectly upon another local agency (the "Concerned Agency"). LAFCO would then seek a formal commitment between the agencies to recognize said area. The City in such situation would be the Concerned Agency with appropriate reason to request special consideration from the Acting Agency in considering projects within the Area of Concern.

The DEIR also states that the City no longer considers Area 6 (located north of the Stanislaus River) a Future Specific Plan area, due to the abandonment of plans for a State Route 120 bypass. Additionally, it is stated that the area is no longer needed to accommodate projected growth through the 2030 General Plan horizon. During the Sphere of Influence update, LAFCO may consider it appropriate to amend the City's Sphere in this area, as it is outside the timeframe of a Primary Area (0-10 years) and Sphere of Influence (20 years). The City may wish to request that the acreage be recognized as an Area of Concern for the City (as described above).

A9-3

Agricultural Resources

The Land Use and Agricultural Resources section of the DEIR identifies 4,147 acres of agricultural land in the Planning Area, of which 1,753 acres are considered prime lands. (The Planning Area, identified in previous figures, appears to be coterminous with the City's proposed "Future Sphere of Influence.") However, Table 4.1-7, illustrating a summary of impacts to important farmland within the Planning Area, shows a reduced number of acres that would be impacted. This impacted acreage is also less than that identified in Table 4.1-2. It is presumed, although not entirely clear, that the impacted acreages are less than those previously identified due to areas within the City's Study area that are designated as North County Corridor / Study Area Overlay or Agriculture on the City's General Plan. It is also presumed that the impacts to this remaining area will be addressed during a future General Plan amendment and/or Sphere of Influence expansion request to LAFCO (which would then require further CEQA review).

A9-4

Mitigation for the Loss of Agricultural Lands

The discussion of agricultural impacts under the 2030 General Plan cites various polices in the Land Use Element and Natural Resource Element intended to conserve agricultural resources, and specifically policy NR-2.3. NR-2.3 states that the City will "explore establishing an agricultural land mitigation program to offset conversion of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland...to residential uses. Such a program should require the permanent protection of similar quality farmland elsewhere at a 1:1 ratio of the amount of farmland converted for residential uses to the amount of farmland protected." However, there is no stated timeframe for when these actions will be completed. Language used in the policy, such as "explore" and "should" leave uncertainty as to when and if an agricultural land mitigation program will be established.

LAFCO is currently considering adoption of an agricultural preservation policy that, in its draft form, requests that agencies demonstrate a reduced impact to agricultural resources upon application to LAFCO for annexation or expansion of a Sphere of Influence. The draft policy also encourages agencies to adopt their own agricultural preservation policies and provides for a "menu" of methods or strategies an agency may consider as part of a "Plan for Agricultural Preservation." The Crane Crossing Specific Plan and Sierra Pointe Specific Plan both include agricultural mitigation programs that are consistent with this "menu" in the Commission's draft policy. The City is encouraged to retain these mitigation programs through the adoption of the Final EIR and project entitlements. A9-4 cont.

Williamson Act Lands A9-5

As indicated in the DEIR, there are approximately 3,356 acres of lands encumbered under Williamson Act contracts within the Planning Area (outside of the current City limits). Government Code Section 56426.5 prohibits LAFCO from approving a change to a Sphere of Influence that includes lands subject to a Williamson Act contract unless it makes specific findings.

In addition, under Government Code Section 51243.5, where a Williamson Act contract was property protested by the City upon execution and such protest was upheld by LAFCO, the Commission shall determine whether the City shall succeed to the Williamson Act rights, duties, and powers of the County upon annexation of the property to the City.

Water Availability A9-6

Both the Utilities and Hydrologic Resources sections of the DEIR provide data regarding the annual groundwater recharge and extractions in the area. Total estimated extractions (from urban and agricultural uses) are listed as 226,000 acre feet per year (AFY), while total estimated recharge (natural and applied) is 178,000 AFY. As water extractions exceed water recharge, it would appear, given the data provided, that overdraft of approximately 48,000 AFY is currently occurring. Various sections of the DEIR acknowledge that groundwater levels in the basin have shown an overall declining trend since the 1980s. Although page 4.4-21 of the DEIR states, "as discussed in the 2009 UWMP, it is not presently known whether or not the aquifer from which the City draws its water supply is in a state of overdraft."

Implementation Program PF-3 is listed as a mitigation measure, which states that the City will work with surrounding jurisdictions, Stanislaus County, the Oakdale Irrigation District, and other agencies to prepare and regularly update a regional groundwater management plan to protect groundwater quality and prevent overdraft conditions. Is there a timeframe for when this mitigation measure will occur? As the data above indicates that the sub-basin may currently be in the state of overdraft, it is imperative that the City determine its safe yield, or the maximum amount of water that can be drawn from the sub-basin, taking into consideration other users.

LAFCO Procedural Requirements A9-7

- *City/County Meeting:* An expansion of the City's Sphere of Influence triggers a requirement for the City of Oakdale representatives to meet with the County to discuss the proposed SOI and explore methods to reach an agreement on its boundaries, development standards, and zoning requirements within the SOI (Government Code Section 56425(b)). If an agreement is reached LAFCO is required to give great weight to that agreement in the consideration of the proposal.

- *Municipal Service Review:* In accordance with Commission Policies and Government Code Sections 56426 and 56430, when updating a sphere of influence, a Municipal Service Review (MSR) must be prepared. (The previous MSR for the City of Oakdale was adopted by the Commission in 2006.) A9-7 cont.

Other Minor Comments

- Figure 3-1 (Planning Boundaries) does not accurately reflect the City's existing Sphere of Influence in the airport area. The City's Sphere of Influence is coterminous with its existing City Limits in this area. A9-8
- Paragraph three on page 4.1-32 (Impact Analysis) repeats language in paragraph one. (Was further analysis meant to go in its place?) A9-9
- Page 5-4's reference to the size of the "Primary Study Area" should state 16.6 square miles. A9-10

Should you have any questions regarding the above comments, please contact our office at (209) 525-7660.

Sincerely,

Sara Lytle-Pinhey

Sara Lytle-Pinhey
Assistant Executive Officer

RECEIVED
SEP 14 2012
BY:

Bloomingcamp Ranch
10528 Highway 120
Oakdale, Ca. 95361
209-847-4101
aplejoy@aol.com

Sept. 14, 2012

City of Oakdale
George Osner, Planning
General Plan Study

- One of the two interchanges of the proposed NCC has been moved from the property on the Eastern corner of Stearns Rd. and Highway 120 to the entire front of our ranch. We would guess that it would " take " out 40-50 acres of almond and walnut production agriculture. We have been farming here for 65 years. This is our way of life. This is our living. This is our home. This is the home of our children, grandchildren and great grandchildren. I1-1

- We have a current lessee who is planning to reopen our apple barn to the public this fall. Our ranch has a long history with the residents of our community and our county. It seems a shame to bury all this under a freeway interchange.

- We were not notified of this change in a timely manner. We had absolutely no notice of any kind from the county until their error was called to their attention.

- With this a documented proposal for the future we suggest that this interchange should be in the City sphere of influence. This would keep any revenue generated in the City; otherwise it would go to the county. I1-2

- If we should loose 40-50 acres of agriculture I suggest the zoning should be changed to a strip of commercial across the highway frontage and that the remainder of the ranch be rezoned R/A. I1-3

- The only interchange we knew of was the one on the Thomas/Arambel properties. That property has no irrigation and is leased for growing dairy feed. Our property is heavily invested in micro irrigation and trees. I1-4

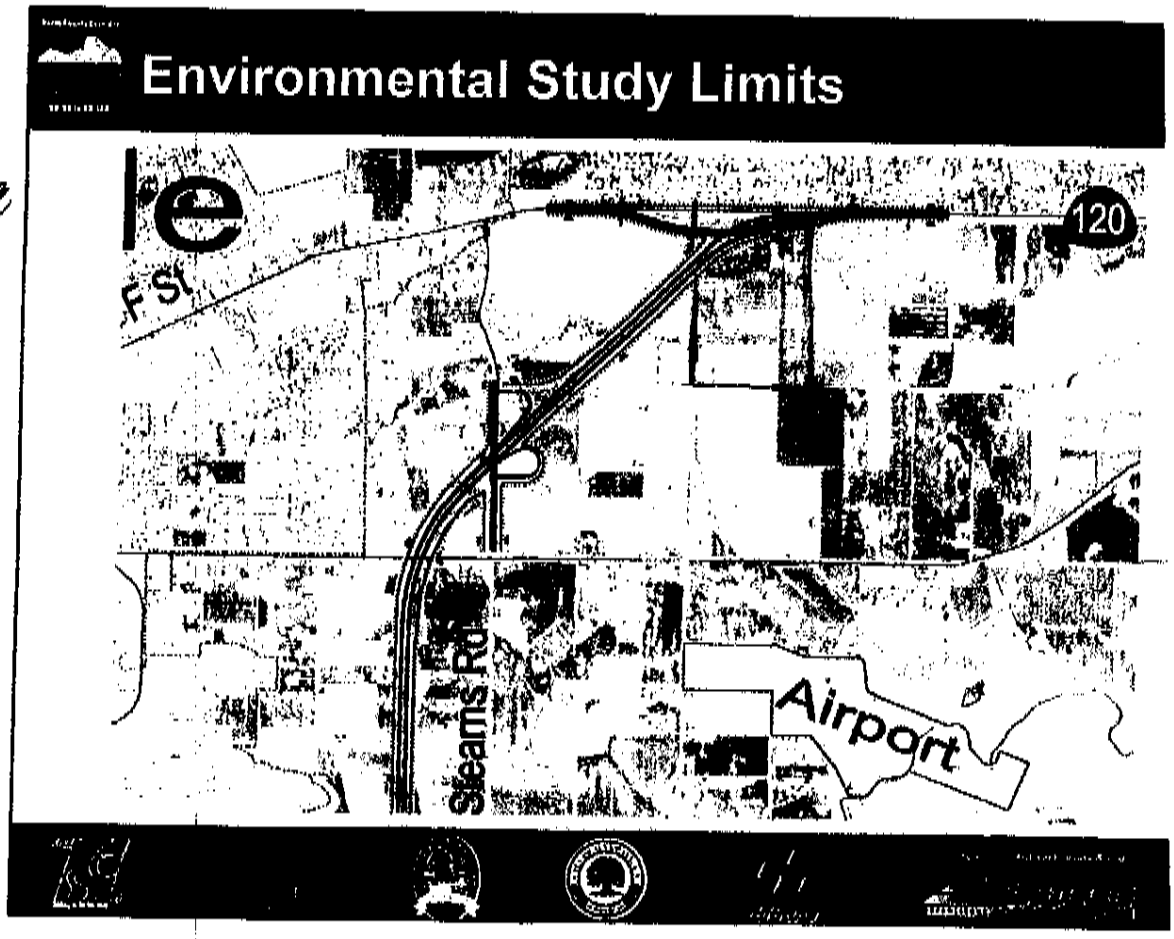
Enclosure: The NCC map of this proposed route with our ranch outline in pencil.

Respectfully submitted,
Bill Bloomingcamp
Joy Bloomingcamp
Bill & Joy Bloomingcamp

Proposed OAKDA

Bill or Joy Bloomingcamp
Ranch
10528 Highway 120
Oakdale, CA 95361

TO: Geo. Asner
Oakdale City Planning
9-17-12



J.B. ANDERSON [redacted] [redacted] LAND USE PLANNING

139 S. Stockton Avenue, Ripon, CA 95366 Phone: (209) 599-8377 Fax (209) 599-8399

September 21, 2012

Mr. George Osner, AICP
Interim City Planner
City of Oakdale
455 South Fifth Avenue
Oakdale, California 95361

Subject: **Comments - Public Review Draft Crane Crossing Specific Plan, dated July 2012**

Dear Mr. Osner:

On behalf of Mr. John P. Brichetto, the purpose of this letter is to provide comment on the City of Oakdale's Public Review Draft Crane Crossing Specific Plan, dated July 2012. As you are aware, Mr. Brichetto is the primary property owner of lands within the Crane Crossing Specific Plan (hereinafter referred to as "Specific Plan") area, and has been actively involved in the planning process for both the Specific Plan and City's efforts on the General Plan Update. Specifically, Mr. Brichetto is primary property owner of lands identified by the City as the "Northern Area" of the Specific Plan.

Please note that the comments provided below are in reference only area identified in the Specific Plan as the "Northern Area" as referenced in Figure 1-2, CCSP Location, and are not in reference to the future development contemplated within the "Southern Area" of the Specific Plan.

Below, I have provided comments that follow each respective topic and page of the Specific Plan:

Figure 2-1 CCCSP Community Form and Figure 3-1 Land Use Plan

- Figures 2-1 and 3-1 of the Specific Plan provide conceptual illustrations of the plan's land use, lotting, circulation, and parks design and layout. Figure 2-1 specifically suggests Collector Streets located on the perimeter of the Central Neighborhood Park, which terminate at the northern boundary of the Specific Plan area. it appears the intent of this circulation pattern is to provide a roadway connection to future development in what is known as a future Specific Plan Area (located north of the Specific Plan). To this extent, careful consideration should be given by the City as to whether these roadway connections are feasible. As the City is aware, the northern boundary of the Specific Plan consists of a bluff which overlooks the future Specific Plan Area. This bluff at many points of the Specific Plan's northern boundary represents a forty (40) to eighty (80) foot depression, and implementation of two Collector Streets for the purposes of connecting the Specific Plan area to the Future Specific Plan Area may not be feasible. Alternative circulation connections should be evaluated and included as part of the Specific Plan. On behalf of Mr. Brichetto, we would be happy to assist the City and the preparers of the Specific Plan in this evaluation. For reference, I have included Figure 3-1 with our handwritten comments. I2-1

Prior to finalizing the Specific Plan, we would respectfully request a meeting with City Planning Staff to discuss these concerns with the Land Use and Circulation Plan as suggested in the Specific Plan. I2-1

3.7.4 Affordable Housing I2-2

- The City is suggesting the following affordable housing strategies be may applied to the Specific Plan:

  "Consider adoption of a mandatory affordable housing program."

  "Consider adoption of in-lieu fees for affordable housing."

  These strategies appear to ignore the Specific Plan's contribution towards affordable housing in the City of Oakdale. The Specific Plan consists of approximately 119 medium density residential dwelling units, or 13.27 acres, which the Specific Plan identifies as recognizable by the City's Housing Element to contribute to the City's regional housing allocation for lower income households. According to the Table 3-1 of City's Housing Element, dated September 10, 2010, the City's allocation for lower income housing units is 381. By allowing for 13.27-acres of medium density residential land use, the northern area of the Specific Plan provides for 31% of the City's overall regional housing allocation for lower income households. It seems that for the Specific Plan, and specifically the northern area, this contribution would suffice without the addition of housing strategies noted above. It appears that the affordable housing strategies may apply more towards the southern area of the Specific Plan, as it located adjacent to mixed land uses, commercial land uses, and major transportation corridors (i.e. Hwy. 108/West F Street).

  With respect to the future development of the Specific Plan, we request these strategies be removed as part of the discussion and/or future requirements for the northern area of the Specific Plan. The City does not currently have a formal affordable housing program such as what is suggested in the Specific Plan. Until such time, it should be removed as policy suggestions in the Specific Plan. Our opinion is that by designating a portion of the Specific Plan for medium density residential land uses, the Specific Plan provides its fair share in allowing the City to achieve its regional housing need for lower income households.

3.7.5 Agricultural Land Mitigation I2-3

- Section 3.7.5 of the Specific Plan discusses the potential for agricultural land mitigation for future development within the Specific Plan. Specifically, the Specific Plan "establishes an agricultural land mitigation program in accordance with City General Plan policy and in consideration of the Stanislaus County Farmland Mitigation Program Guidelines."

  It is important to note that while the City's proposed General Plan Update suggests the City will consider a City-wide agricultural land mitigation program, said program has yet to be formally adopted.

  In addition, as City Staff is aware, the Stanislaus Local Agency Formation Commission (LAFCO) has initiated policy discussions in regards to an agricultural land mitigation program that would

affect future annexations within Stanislaus County. This program, as presented by LAFCO, is still in draft form and under consideration by the LAFCO Board and Cities within Stanislaus County. At some point in the near future, it is our opinion that the Stanislaus LAFCO Board will adopt a County-wide agricultural land mitigation program. At that time, the Specific Plan will be subject to said program, as these lands will be annexed into the City of Oakdale. Therefore, our suggested approach as it relates to the agricultural land mitigation program provided in the Specific Plan is that language be revised to reflect LAFCO's current efforts, and that any policy adopted by the LAFCO Board will apply to future annexation and development of the Specific Plan. This approach would allow for consistency between local and regional efforts towards an agricultural land mitigation program. I2-3

5.4 Phasing Program I2-4

- Based on previous discussions with City Staff, the Specific Plan's Financing Plan will be released for review in the near future. At this time, we request an opportunity to review the Specific Plan's Financing Plan against the Phasing Program suggested in the Specific Plan, and share our comments with City Staff and the Specific Plan's infrastructure Consultant.

On behalf of Mr. Brichetto, thank you for the opportunity to provide comment on the Specific Plan, and we look forward to working with you and your Staff in finalizing the Specific Plan and its associated documents. Should you have any questions, please feel free to call me at (209) 599-8377.

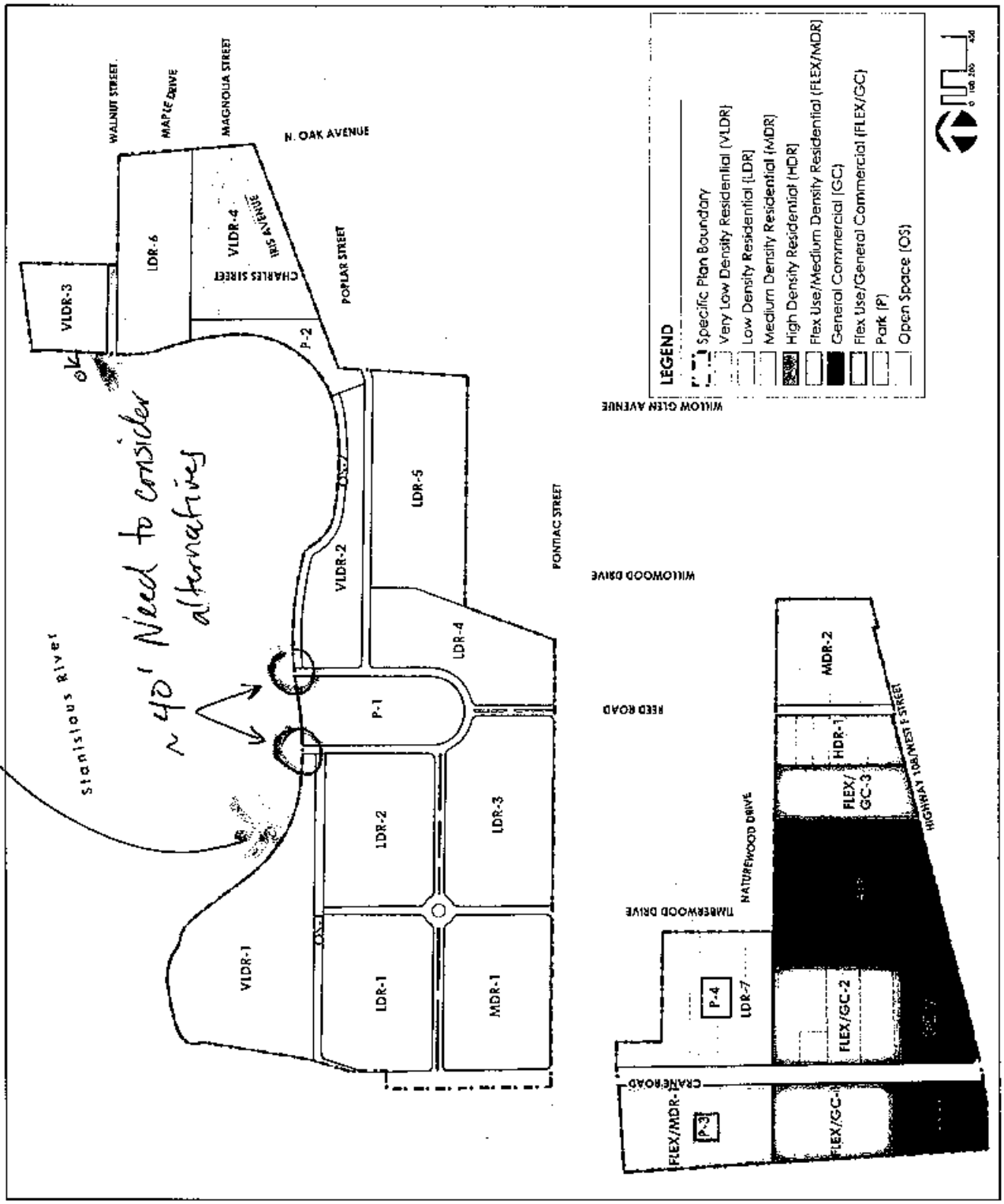
Sincerely,

Mark Niskanen
Senior Planner

cc: Mr. John P. Brichetto
Project File

Attachment

Figure 3-1: LAND USE PLAN



Possible future connection?
~40' Need to consider alternatives

Proposed New Land Use Plan

The existing General Plan would suggest a continuation of residential development either medium density or low density residential with exception of the segment already shown as general commercial at the intersection of Crane Road. I3-1

Parcels north of the property in question [P.Q.], which is Anderson Homes ,Stage 1 and 2 have four stubbed out streets that were in place to serve a medium density to low density residential development of the P.Q. Buyers of those properties in Anderson Homes were shown in the model for Anderson Homes the existing General Plan for the PQ and many decisions to buy in Anderson Homes were based on this P.Q. being another low to moderate residential development not commercial and high density residential as shown on the proposed new plan.

Traffic generation from the proposed General Plan Change would not be able to be tolerated in the existing Anderson Home Development nor would the State likely allow traffic to enter and exit on Hwy 108. The only feasible way that traffic from the proposed General Plan Change could be enabled is via a connector within the PQ to Crane Road and it's signalized intersection.

The existing roads in Anderson Homes have 50 foot right-of –ways with 30 feet of pavement. They are classified as residential roads with the lowest traffic carrying capacity available. The proposed New Land Use Plan with it's high density and commercial designations generate enough traffic to warrant collector size right-of-ways and roadways. At a very minimum the Environmental Impact Study should include a comprehensive Origin and Destination Study of the proposed new land use plan .Such a study will verify not only generated traffic volumes but direction and estimated peak time periods.

Aside from the impossibility of coping with the increased traffic generation, it doesn't make good planning to have more strip commercial zoning on Highway 108 in an area where Average Daily Traffic is primarily commuter traffic. A two hour platoon in the morning and in the afternoon .doesn't justify the necessary support for commercial businesses. For the last twenty years, there are at least ten parcels along Hwy. 108 extending from North.Oak to Reed Rd. that are zoned commercial and yet have not been developed. The Central Business District does not need more strip zoned commercial to pull business away from it'core.

The existing General Plan for the P.Q. shows residential development as medium density residential. On the north of the P.Q. are the single family homes in the Anderson Development. While on the south of the P.Q. we have the Vineyards zoned SFLDR. For continuity, it would make sense the P.Q. remains zoned single family as well.

Yours truly
Brewster Burns

Brewster Burns
209 Grapewood Court
Oakdale

RECEIVED
SEP 07 2012
BY:

Community development department,

Attached is the presentation that I gave to the city council on Tuesday, September 4, about the concerns regarding the Crane Crossing development. I forgot to tell the council that I was representing the neighborhood via signatures I had collected going door to door. Attached also is a copy of those signatures. I did not make it to all the houses due to time but, every house I did contact was more than eager to sign the petition. I4-1

I hope you will take our concerns into consideration when developing this property.

Thank you,

Cheryl Folla
2465 Naturewood Drive
Oakdale, CA 95361
209-848-0418
GCFolla@comcast.net

I am here representing the residents of the Anderson Home subdivision bordering the Crane Crossing development. We have many questions and concerns regarding the Crane Crossing plan that we learned about from a recent article in the Modesto Bee. Upon further investigation it was discovered that the area in question, Crane Crossing, had been rezoned around 2003 without notification to the surrounding neighborhoods. In 1990 when this subdivision was originally established this had been zoned residential with ONLY the four corners at Crane and 108 to be commercial use. I4-2

Our concerns are as follows:

- The vagueness of the plan designated as flex/general commercial leaves too many open possibilities. We are concerned with the type of businesses interested in this development. We do not want commercial behind us. A low volume grocery store conservatively has over 80 deliveries from semi's and 18 wheelers a week. These idling trucks would bring noise and pollution to our quiet neighborhood. I4-3
- We are concerned with the change in the environment due to the increased access through planned thoroughfares and how it will impact the overall safety of the Anderson Home Subdivision which has been virtually without crime for over 20 years. There is plenty of vacant land available with no current housing neighboring in the vicinity that would appear much more suitable for commercial expansion of our city. We believe the land should be developed based on the original design of low density residential. I4-4
- Lastly, the plan as it is laid out allows for too much variation which makes it impossible to evaluate. We the concerned residents would like more clarity to the city's proposed plan. I4-5

We protest the proposed land use of the property bordered by Highway 108, Crane, Reed and the Anderson homes.

Name	Signature	Address	Phone	Residence since
Teri Vines	Teresa Vines	224 Fairwood Dr	845-2438	1998
Monty Vines	Monty Vines	224 Fairwood	848-2438	1998
Julie Kellam	Julie A. Kellam	212 Fairwood	548-6888	1993
Kay Stephenson	Kay Stephenson	2388 Naturewood	847-9622	1994
Dennis Tamo	Dennis Tamo	2454 Naturewood	916-769-4448	1993
Colleen Tussler	Colleen M Tussler	2476 Naturewood	848-1858	1993
Amy Rowe	A Rowe	285 Stonewood Ln	847-4909	2003
Steve Humble	Steve Humble	283 Stonewood Ln	568-9595	2010
Kelli Cooke	Kelli Cooke	291 Stonewood Ln	735-1408	2011
Scott Pinkerton	Scott Pinkerton	279 Stonewood	847-8811	2012
Janet Macedo	Janet Macedo	2833 Whitewood Ct	918-1251	2007
Barbara Vieira	Barbara Vieira	2857 Whitewood Ct	845-1523	1998
Bernadette Nunes	B. nunes	2895 Whitewood	847-0767	2006
Marc Rowe Jr	Marc Rowe	285 Stonewood Ln	847-4909	2003
Oscar Padilla	Oscar Padilla	257 Stonewood Ln	941-4965	2005
Ron Osterlund	Ron Osterlund	296 Stonewood Ln	847-4656	1997
Mel McDonald	Melanie McDonald	8206 Crane Rd	847-4534	1965
Trish McDonald	Trish McDonald	8206 Crane Rd	847-4534	1968

Letter I4

We protest the proposed land use of the property bordered by Highway 108, Crane, Reed and the Anderson homes.

Name	Signature	Address	Phone	Residence since
Robert VanderZorg	Robert Vander	2499 Naturewood	209-845-8335	1992
Patrick J. Barrett		2533 Naturewood	209-844-5031	2007
LINDA Medeiros		2565 Naturewood	848-3058	16 yrs
Robert Medeiros	Robert Medeiros	2565 Naturewood	848-3058	16 yrs
Jeff Hood		2581 NATUREWOOD	848 3603	19 YEARS
warren Ferreira	Warren Ferreira	2598 Naturewood	847-6875	2008
MATTHEW J'OST		2586 " "	847-5949	14yrs
John Cilka		2572 NaTure Wood	847-5207	1991
Jim Davis		203 Fairwood Dr	681-9640	2012
TASCIA DAVIS		203 Fairwood Dr.	681-9640	2012
Justin Tuggle		2476 Naturewood Dr	848-1858	19 years
Wilma Haslam	DELORES BLINCOE	209 Tinkwood Dr	847-2851	12 years
Gerald Bower		215 Fairwood Dr	847-2901	10 years
ERIC COLO		245 FAIRWOOD DR	847-8508	20 yrs.
Jame Hamilton		236 Fairwood Dr.	847-7780	18 yrs
MARGIE M. PEREZ		248 Fairwood Dr.	847-5377	1997
Dana Mello		254 Fairwood Dr	840-3631	2009
Francis T. Henry		230 Fairwood Drive	848-2718	1995

Letter I4

We protest the proposed land use of the property bordered by Highway 108, Crane, Reed and the Anderson homes.

Name	Signature	Address	Phone	Residence since
Ann Orr		190 Brownwood	6024357	2004
Kristen Becker		199 Brownwood	847-9393	1993
[illegible] Becker		199 Brownwood	847-9393	1993
George Meyers		196 Brownwood	606-4800	2012
Robert A. Roza		2361 Waterwood Dr.	848-8040	1995
Horace R Crump Jr		2322 WATERWOOD DR	505-8768	1992
MARK S. LAHEY		214 TIMBERWOOD DR	845-9704	1998
[illegible]		228-Timberwood	8488247	1998
James W Cox		244 Timberwood	7952717	2001
BARBARA L. COX		244 TIMBERWOOD DR.	845-2917	2001
Bill Looper		250 Timberwood Dr	848-9682	1998
LARRY PARKER		260 Timberwood Dr	64 1165	2009
Larry Koch		2588 Foxwood Ct	847-4443	1997
Albert Harrison		265 Timberwood Dr	847-3297	2004
Darrell Clark		259 Timberwood Dr	848-1298	2009
Cheryl Folk		2465 Waterwood Dr	848-0418	1994

Letter I4

We protest the proposed land use of the property bordered by Highway 108, Crane, Reed and the Anderson homes.

Name	Signature	Address	Phone	Residence since
STEPHEN P. STARK	Stephen O. Stark	2517 NATUREWOOD DR.	209-679-9887	1994
Madge W Kyler	Madge W Kyler	2549 Naturewood Dr.	209 848 2549	1992
April M Brighton	April + Mike Brighton	203 Timberwood Dr	(209)847-6905	2010
George Folla	George Folla	2465 Naturewood Dr	209-848-0418	1994

Letter I4

From: J D Godkin [jdgodkin71@sbcglobal.net]
Sent: Monday, September 17, 2012 4:51 PM
To: George Osner
Subject: Opposition to Sierra Pointe Specific Plan [SPSP]

Importance: High

JAMES D. GODKIN

837 Townhill Avenue · Oakdale, CA 95361
(209) 844-5501 • jdgodkin71@sbcglobal.net

September 16, 2012

Attention: George Osner, Consulting Planner, City of Oakdale
Mayor Paul and Oakdale City Council Members

RE: Pending Sierra Pointe Specific Plan [SPSP]

Dear Officials:

Please accept this letter as **OPPOSITION** to your SPSP, Stearns Alignment, Area 1/Area 2 . . . or, whatever else you want to call it. You and the newspapers have called it by several names. Designed confusion?! I5-1

Having done what our attorney's have deemed 'due diligence', we learned that the City of Oakdale, Stanislaus County and others have more than likely 'caused us grievous harm' and further action may be warranted.

Is there some semblance of a coordinated conspiracy being implemented? Many think so. After all, how is it that not all property owners affected by your Stearn's Alignment NEVER had a voice in combating even the mere suggestion of this route during any of your meetings? We have had no notice, no voice, and no representation regarding this matter. How do you account for this? Unlike the thousands you spend on elections, we didn't deserve even a postcard on something that could devastate out lives?!

During our meeting with Mr. Osner on Wednesday, September 12, 2012, my son and I were dismayed at how 'protective' Mr. Osner was of SPSP. He was seemingly quite guarded in his willing to share details. We concluded it's probably not Mr. Osner's choice. Is he being set up as a 'straw man' for the city in its effort to push SPSP down the throats of unsuspecting property owners?

How else can you explain that when asked specifics about how affected city and county residents were made aware of Oakdale's SPSP, we received 'it was done lawfully'?

Yet, when pushed, your 'lawful notice' included a whispered newspaper blurb (no knowledge of which newspaper or issue), a posted notice on the door of Oakdale City Hall (convenient when administrators know nobody goes to city hall save personal issues), and it was recently posted on Oakdale's website. I5-2

After spending hundreds of thousands, if not millions, of dollars on studies, etc., this is all the notice you feel the scores of people to be negatively affected deserved? No conspiracy, eh? Shameful. Who is leading this slaughter?

How do you city officials account for the fact that when YOU want property owners, residents, et al to know about YOU and YOUR interests for election purposes YOU use very elaborate informational mailings, telephoning, and well organized public relations campaigns; yet, you conveniently choose to trivialize any public awareness on something that will ultimately destroy hundreds of lives and businesses? Such tactics is not acceptable and considered deceitful.

The county representative, Matt Machado, intimates that 'no decision has been made' regarding which route the NCC will follow into Oakdale. Have you spent as much money on promoting the Wamble route as Stearn's?

Have you even had the decency to notify Oakdale businesses that you are threatening to cut off their business' life line and intend to re-route customers away? Businesses I have addressed were not aware of SPSP. They are now.

The county screams that 108/120's accident rate is 35% above the norm. Yet, when we ask longtime residents if they know of many accidents on 108/120 in downtown Oakdale, they answer is 'no', or 'no, not really' or 'have there been any?' Personally, during the many years I have been in/through Oakdale, I have not seen any accidents. I haven't even seen many drivers being cited. Maybe because there aren't any issues—what with the controlled traffic lights and all.

The harm that SPSP will cause so many people—and benefit so very few—I ask the city council to revisit their 2030 General Plan, particularly SPSP and strongly consider using Wamble!

Thank you for your time and kind consideration.

Jim Godkin

From: J D Godkin [jdgodkin71@sbcglobal.net]
Sent: Monday, September 17, 2012 4:57 PM
To: George Osner

Importance: High

Vicki C. Godkin

Saturday, September 15, 2012

Honorable Mayor Paul and City Council Members:

Having spent nearly forty years visiting family and friends in Oakdale, my husband and I decided to invest in Oakdale and have spent the past four (4) years in search of a country home here. I6-1

Finally, last February, we found an old, run-down former dairy farm that presented us with a good opportunity to realize our long-awaited "family home in the country". We refinanced our "nearly paid for" Bay Area home and prepared to relocate to Oakdale. This was an enormous step for two people in their 60's looking at retirement. Still, the property we purchased held much hope and excitement for us. We prayed we had made the "right decision" and then spent hundreds of thousands of dollars, and months of intense work to turn our "sow's ear into a silk purse".

Our son, acting as our "Project Manager" is turning the old run-down former dairy farm into a home that has earned considerable elation from neighbors, friends and on-lookers. Quite a great feeling to be sure.

Being extremely cautious investors, asking our real estate agent several times during the buying process if there was anything we should be aware of regarding Oakdale or our pending neighborhood [i.e., "Sphere of Influence" and/or future city or county development, etc.]. We checked with numerous businesses, neighbors, and local officials. We were told there wasn't any reason that would prevent them from buying our proposed property, either.

Then, the bomb hit.

The first part of August 2012—out of the blue—we were first made aware of the NCC and Oakdale's SPSP. Clearly, we had never heard of either of these two projects. Apparently, and quite suspiciously, we weren't alone. Over 100 property owners were left out of the loop, too!! Like everyone else, we were only told 'the Oakdale by-pass' was going down Claribel into 108/120.

At an August 16 meeting with Mr. Matt Machado (Stanislaus County) and Mr. Chris Balaji (Jacobs Engineering/Caltrans) we were told that if Oakdale's preferred route [SPSP] were chosen by the county, the NCC would end up taking at least two acres of our property (which we had planned on cultivating as an almond orchard for future retirement income) to develop a four-lane highway!

A highway: this was exactly what we were trying to get away from in the Bay Area where we lived: traffic, noise and pollution. Now, all this is proposed to be in our backyard! I6-1 cont.

Not only were we nor, allegedly, our realtor, her firm, the title company, businesses in Oakdale, or our neighbors never made aware of any public meetings on the proposed NCC and SPSP, we were told at our meeting that "no harm was done" to us by *not being apprised of these two plans* (e.g. not receiving any notification from the county regarding public meetings about these projects) prior to our purchasing our property.

For the record, our attorney's disagree. Suffice it to say, we would NEVER have refinanced our Bay Area home and purchased this Oakdale property if we were aware of even the remotest of possibilities that a four-lane highway may be going near—much less through—our property!

At this same August 16 meeting, both Mr. Machado and Mr. Chris apologized numerous times for the 120 property owners never receiving letters regarding the public meetings or proposals. Isn't it rather odd that dozens of property owners, who are an integral part of Oakdale's SPSP, had conveniently been left out of the information process? We never had a say regarding any route to considered, no representation in any of the 'official' meetings. And, without such notice there was a conspicuous absent of protest regarding the 'Stearn's Alignment'. Bet this made city officials feel quite confident.

Didn't it occur to anyone at city hall that there was absolutely no opposition to SPSP from any of the property owners whose live will be affected? Or, was this truly what is considered by many a planned conspiracy by Oakdale's leadership to keep us in the dark while rushing the approval process through?
Rather than disrupt the lives, hopes and dreams of families who invested and dedicated their money, time and faith in Oakdale by going down Stearns Road, why not look at one glaring possibility—the 'elephant in the living room' per se: relocate the Oakdale airport and run NCC through the current airport site? The city and county already own the property and it is a straight—less costly—route that satisfies many and merely inconveniences a very few.

The Wamble Road access would also be a less disruptive and considerably less challenging route that should definitely be considered. Things aren't always about the almighty dollar when it comes to destroying people's lives and livelihoods.

Finally, I find it highly unsettling that the Mayor and other elected city officials choose to place more importance on campaigning for their personal electoral benefit than protecting the lives of their constituents. They spend thousands of dollars on telephone calls, flyers, posters, lawn signs, ads, etc. selling us with hollow promises, but do not have decency to even send a simple post card notifying us of something that could potentially prove disastrous to many lives.

I, for one, hold the City of Oakdale's leadership, Mayor Paul, the city council, and Stanislaus County administration personally responsible and liable for what I consider

secretive, self-serving motives, completely void of the welfare and lives of those affected by the NCC and SPSP projects. I6-1 cont.

Please accept my letter in strong **OPPOSITION to SPSP**. NO SPSP--Use Wamble!

Respectfully submitted

Vicki C.Godkin

Vicki C.Godkin
837 Townhill Avenue
Oakdale, CA 95361

From: George Osner [gosner@ci.oakdale.ca.us]
Sent: Tuesday, September 18, 2012 11:46 AM
To: Daniel Dameron; Harriet Ross; doug (doug@dlwhitelawgroup.com)
Subject: FW:

From: Judy Moore [mailto:puppymama@clearwire.net]
Sent: Monday, September 17, 2012 4:36 PM
To: George Osner
Cc: machadom@stancounty.com
Subject:

September 17, 2012

Robert & Judith Moore
1231 S. Strearns Road
Oakdale, CA 95361

George Osner, Consulting Planner
City of Oakdale
Community Development Department
120 South Sierra Ave
Oakdale, CA 95361

RE: proposed 2030 General Plan

Dear Mr. Osner:

We are writing this letter to address our concerns and objections about the proposed 2030 City of Oakdale General Plan. Our concerns are as follows:

1. This would be a gross miss use of agricultural land in an area that prides itself in the income that is raised from agriculture. I7-1

2. The current City waste water treatment facility would not be adequate for the proposed area of expansion. The City can't even pay for the present expansion. They are making an interest only payment. How can they expect to pay for future needs? I7-2

3. There are currently large areas of undeveloped and underdeveloped land within the City limits Therefore, why does the City need to expand? I7-3

4. The infrastructure in the City now is in bad need of repair. How will expanding the City make this problem better? I7-4

5. Where will the water come from for future development? Oakdale Irrigation District is presently trying to sell water to Brisbane, California for a development in that city. So if OID sells its water to the bay area where will Oakdale gets it water from? I7-5

6. Currently financially strapped Oakdale has had to reduce City services, how can expanding the size of the City not affect these services even more? I7-6

7. Our biggest objection is that our property would become part of the City of Oakdale and we do not have a vote in that process. Shouldn't this be put to a vote of the public? It seems that developers over individual property owners are being favored in the decision to grab county land and make it part of the City. I7-7

Sincerely,

Robert & Judith Moore

salmonator@clearwire.net
puppymama@clearwire.net

(209) 847-7933

Letter I8

SEP 05 2012

1600 Irvin Court
Oakdale, CA 95361
(209) 847-0369
August 23, 2012

Planning Division
Oakdale City Hall
280 North Third Avenue
Oakdale, CA 95361

Dear Sir,

After reviewing the latest maps showing details of the North County Corridor it is apparent that the two choices near Wamble Road would do irreparable harm to the operation of the Burchell Nursery. It would be hard to find another 700 acre parcel near Oakdale that is suitable. Burchell Nursery is one of the top income-producing companies in the Oakdale area. Do not make the Wamble road mistake! I8-1

The best route is to follow Claribel further East and then turn north on Tim Bell Road.

Sincerely,

E E Waggoner

EE Waggoner

RECEIVED
AUG 27 2012
BY:

8-23-12

As a lifetime resident and 4th generation Oakdalean, I am deeply disturbed by the City of Oakdale's growth plans for the city. I do realize that change is inevitable, but I also feel that these changes will negatively impact our town. I9-1

I realize that these plans are "long-range" plans but even so, I am asking that the city reconsiders. First, our city is financially broke. Perhaps you should finish what was started. There are many empty homes and lots sitting in the vineyard area. Our economy has taken its toll in many aspects and you'd think that before you even begin to look at other growth plans, you would try to complete this project first. That said, before building any more, shouldn't we be aware that with growth comes crime? Oakdale has always been a nice, safe community that many folks desire with its small town appeal and move here for that reason. Adding that many homes and commercial buildings will take away from that small town feeling. Do we really need to expand? More people=more crime. Your first priority should we hiring more police and fire personnel to support us now, in the present first. Another question is, shouldn't you be concerned about additional schools? Now I've heard rumors floating around about another elementary school but all of our schools-elementary the junior high and the high school are busting at the seams now. Before adding 1,900 homes, maybe our childrens' educations should be a priority by either keeping, not increasing classroom sizes. And then there's the traffic. Need I say more??????

Yes, I will be directly affected by the Crane Crossing Specific Plan area as we live behind the orchard. And yes, I do agree that this side of town needs a grocery store as it takes me 15 minutes either into Riverbank or to the other side of town (this is why that bypass should have built years ago. My parents both complain that when they were in high school 40 years ago that there was talk of a bypass and it never happened.) Now look at what a disaster it is any time of the week but especially on weekends with people headed up to the mountains. Poor, poor planning. And a shopping area would help provide jobs. I'm all for "Shop in Oakdale" and keep our business local but I do not feel that additional homes behind us is the answer. Will it really make Oakdale aesthetically more pleasing? Homes, especially homes built on top of each other doesn't do much for aesthetics. Our town and community depend largely on agriculture and it is beautiful to drive into town and see all the orchards. I truly believe we will be sorry down the road to lose more agricultural land, this is the heart of Oakdale.

Keeping our population down should be a priority to Mrs. Pat Paul, along with growing jobs, such as fire, police, educators, etc. And both can be done in many ways. Growth is not what will keep our little town the way that it should be. If people want growth, move to Modesto or any other Suburban Hell but keep Oakdale small!!!!!!!!!!!!!!!!

CHAPTER 3
Responses to Comments on the Draft EIR

3.1 Introduction

Individual responses to each of the comment letters identified in Chapter 2 are included in this chapter. In some cases, multiple comments were received on similar planning and/or environmental issues. In order to provide the commenter with a complete picture regarding his or her concern, the City prepared a master response to all comments regarding a given subject. Master responses are provided in this chapter.

Consistent with CEQA Guidelines Section 15088, only significant environmental issues raised are required to a response in the FEIR. Thus, comments which present opinions about the project unrelated to environmental issues or which raise issues not directly related either to the substance or adequacy of the DEIR, the 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, Sierra Pointe Specific Plan are noted without a detailed response. All comments, however, are included to maintain a record of all comments received and allow for the City decision makers to know the opinions of the commenter.

3.2 Response to Comments

The following responses correspond to the letters and numbers for each comment presented in Chapter 2:

Master Response #1 – North County Corridor

The North County Corridor Project (NCC) proposes to build a west-east roadway from SR-99 north of the City of Modesto to SR-120 approximately six miles east of the City of Oakdale. The purpose of the project is to improve the regional circulation network, and serve as a bypass for the cities of Riverbank, Oakdale, and Modesto. To plan for the freeway/expressway, the North County Corridor Transportation Expressway Authority (NCC TEA) was formed. The NCC TEA consists of the cities of Modesto, Oakdale, and Riverbank; the County of Stanislaus; and ex-officio members Stanislaus Council of Governments (StanCOG) and the California Department of Transportation.

The NCC TEA anticipates that the ultimate facility would be planned as a multi-lane, access-controlled expressway/freeway with interchanges, at-grade intersections, grade-separated railroad crossings, irrigation district crossings, and local street alignments. This new roadway would be

approximately 25 miles in length. Various roadway alignments are being considered along with the "No Action" alternative during the study of the project. As of fall 2012, there were two alignments being studied and considered for the eastern boundary and connection to SR 120 near the City of Oakdale, one of which would be located along Stearns Road and the other along Wamble Road.

The NCC project is a separate project under the authority of the NCC TEA, and it is not included as part of the City of Oakdale General Plan Update, Climate Action Plan (CAP), Crane Crossing Specific Plan (CCSP), or Sierra Pointe Specific Plan (SPSP). A separate environmental review process will be undertaken for the NCC project to analyze and determine the ultimate alignment. Thus, potential impacts resulting from implementation of the NCC are not analyzed as part of the proposed project.

However, the EIR addresses the NCC in three ways. First, the two potential alignments of the NCC would affect future development plans of the SPSP. As described below, the SPSP alternatives analysis considers the potential land use changes that would result from the different possible NCC alignments. Second, the Oakdale 2030 General Plan (the proposed project) identifies the areas that could contain the potential future NCC alignments. Third, the EIR considers the effects of the NCC on cumulative (future) traffic and circulation conditions.

Chapter 5 Alternatives of the DEIR analyzes alternatives to the SPSP that respond to the potential for the NCC alignment to be located along Stearns Road. Page 5-46 through 5-52 of the DEIR provides an analysis of Alternative 1, which proposes commercial uses along Stearns Road if the NCC alignment traverses the site. No residential uses would be constructed in the NCC Phase located in the southern portion of the site, and commercial and parkland would be included in this area instead. Beginning on page 5-53 of the DEIR, an analysis of Alternative 2 to SPSP is provided. Under this alternative, no development would occur in the southern portion of the site, if the NCC corridor traverses the site with an interchange on Stearns Road.

Please note that the final, adopted Oakdale 2030 General Plan designates the area south and east of the City's existing sphere of influence boundaries as an Area of Concern (Figure LU-2 Land Use Diagram). The Area of Concern includes the areas that could contain the potential alignments being considered for the future NCC. This designation does not denote any specific land uses but rather represents a geographic area in which land use decisions or other governmental actions of one local agency (the "Acting Agency" - Stanislaus County) impact directly or indirectly upon another local agency (the "Concerned Agency" - City of Oakdale). Upon reasonably foreseeable implementation of the NCC, the City Council may consider comprehensive planning of some or all of this area through one or more specific plans, or may choose to retain lands for agricultural or rural uses.

As previously stated, the NCC is a separate project and not a part of the proposed Oakdale 2030 General Plan, Climate Action Plan, Crane Crossing Specific Plan, or the Sierra Pointe Specific Plan. As a result, a separate environmental review process will be undertaken to evaluate the potential impacts of the NCC project.

Public Agencies - State Agencies

Letter A1. California Department of Conservation

Response to Comment A1-1

The commenter summarizes planned development under the General Plan, CCSP, SPSP, and details the amount of farmland that could be lost if the plans are implemented. The commenter then recommends that the DEIR address issues related to the loss of important farmland in the Planning Area.

The commenter is directed to Section 4.1 of the DEIR, "Land Use and Agricultural Resources" for an analysis of project related agricultural impacts. In addition, on September 26, 2012, Stanislaus LAFCO adopted an Agricultural Preservation Policy that included four strategies to minimize the loss of agricultural lands. Consistent with LAFCO's policy, General Plan Policy NR-2.3 Agricultural Land Mitigation Program now requires that development under the General Plan prepare a Plan of Agricultural Preservation and implement one of these four strategies. The DEIR has also included mitigation measures requiring agricultural mitigation at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance and Unique Farmlands to residential uses, which is consistent with one of LAFCO's agricultural preservation strategies. This mitigation measure applies to conversion of agricultural lands in the CCSP and SPSP.

Response to Comment A1-2

The commenter describes different methodologies for determining the significance and value of lost agricultural land.

Comment noted. The commenter is directed to Section 4.1 of the DEIR, "Land Use and Agricultural Resources" for an analysis of project related agricultural impacts associated with implementation of the 2030 General Plan, CCSP and SPSP. It should be noted that this analysis in the DEIR finds and states that the loss of agricultural land is significant and unavoidable under the proposed project.

Response to Comment A1-3

The commenter states that the included framework for off-setting agricultural impacts are not expressed explicitly as mitigation and states that it does not have mitigation measures under the correct heading. The commenter goes on to say that this could be remedied by including the agricultural framework as mitigation and moving them to the correct location.

Although the agricultural framework is incorporated as part of the proposed CCSP and SPSP projects, as discussed in Section 4.1 of the DEIR, "Land Use and Agricultural Resources," it has now also been added as mitigation measures in the DEIR. Please see Chapter 4 of this FEIR, "Minor Revisions to the DEIR" for the corrected text. It should be noted that the Stanislaus LAFCO adopted an Agricultural Preservation Policy on September 26, 2012 that included four strategies to minimize the loss of agricultural lands. Consistent with one of these strategies, the DEIR has included mitigation measures requiring agricultural mitigation at a ratio of at least 1:1 for conversion of

Prime Farmlands, Farmland of Statewide Importance and Unique Farmlands to residential uses in CCSP and SPSP.

Response to Comment A1-4

The commenter states that because agricultural conservation easements have become more widely used that the elements present in the CCSP and SPSP should be moved to the mitigation measures section. The commenter then describes ways in which to implement agricultural conservation easements.

The agricultural framework in both the CCSP and SPSP already require permanent agricultural preservation that consists of the purchase of agricultural conservation easements granted in perpetuity from willing seller, consistent with the Stanislaus LAFCO Agricultural Preservation Policy. Although the agricultural requirements are incorporated as part of the proposed CCSP and SPSP projects, it has now also been added as mitigation measures in the DEIR at the commenter's request. This addition is minor, simply reinforces the agricultural requirements for development under the CCSP and SPSP, and is already analyzed in the DEIR. Please see Chapter 4 of this FEIR, "Minor Revisions to the DEIR" for the corrected text.

Response to Comment A1-5

The commenter makes a closing statement and provides their contact information.

Comment noted. Comment does not address the content or adequacy of the DEIR. No further response required.

Letter A2. California Department of Transportation

Response to Comment A2-1

The commenter summarizes the proposed project and states that future development may require additional traffic studies and permits.

Comment noted. As future projects and actions move forward under the General Plan, CAP, CCSP, and SPSP, they will be reviewed by the City and addressed on an individual basis. Each project and action will comply with all applicable local, regional, State, and federal regulations and will obtain all required permits. In addition, subsequent technical studies addressing site specific traffic issues may be required by the City as individual projects move forward.

It should be noted that the Mobility Element of the Oakdale 2030 General Plan contains several goals, policies, and implementation programs that apply to new development. Specifically, Policy M-2.11 requires the preparation of site specific traffic studies for new development as determined by the City, and Policy M-2.12 requires new development to mitigate for traffic impacts.

Letter A3. Central Valley Regional Water Quality Control Board

Response to Comment A3-1

The commenter states that projects disturbing over one acre of soil will be required to obtain several stormwater related permits and goes on to describe potential required permits in detail.

Comment noted. As future projects and actions move forward under the General Plan, CAP, CCSP, and SPSP, they will be reviewed by the City on an individual basis. Each project and action will comply with all applicable local, regional, State, and federal regulations and will obtain all required permits. In addition, subsequent technical studies addressing site specific water quality issues associated with operation or construction may be required by the City as individual projects move forward.

It should be noted that Section NR-4 Water Resources and Water Quality of the Natural Resources Element of the 2030 General Plan contains several policies that address water quality. Policies NR-4.4 through NR-4.7 require the protection of Oakdale's water resources from stormwater runoff and regulate discharge from various users.

Letter A4. Governor's Office of Planning and Research

Response to Comment A4-1

The commenter states that the DEIR was submitted to selected state agencies for review and acknowledges that CEQA requirements for environmental documents has been complied with.

Comment noted. While this comment does not address the content or adequacy of the DEIR specifically, City decision makers will consider all comments when making a decision on approval of the proposed project.

Letter A5. Native American Heritage Commission

Response to Comment A5-1

The commenter summarizes CEQA requirements regarding historical and archaeological resources and states that a Sacred Lands File search be conducted.

A Sacred Lands File search was conducted as part of the proposed project. Please see page 4.2-7 of the DEIR (Section 4.2, "Cultural Resources") for a discussion of NAHC consultation and the results of the Sacred Lands File search.

Response to Comment A5-2

The commenter recommends making contact with several Native American contacts that they provided to see if the project may have an impact on a Native American cultural resource.

As recommended by the NAHC, individual letters were sent to each of the ten Native American contacts on August 24, 2012 soliciting input on potential impacts resulting from, and comments on, the proposed project. In addition, phone calls to each of the ten Native American contacts were made the week of October 8, 2012. No comments on the proposed project were received or provided by any Native American contact.

Please note that Section NR-7 Cultural Resources of the Natural Resources Element of the 2030 General Plan contains policies requiring implementation of applicable laws and regulations governing historic preservation, as well as consultation with appropriate organizations and individuals.

Response to Comment A5-3

The commenter provides several requirements that would apply if the project was subject to the National Environmental Policy Act (NEPA).

Comment noted. The proposed project is only subject to the requirements of the California Environmental Quality Act, and consistency with NEPA is not required.

Response to Comment A5-4

The commenter summarizes several sections of the Public Resources Code and provides suggestions for effective consultation.

Comment noted. As future projects and actions move forward under the General Plan, CAP, CCSP, and SPSP, they will be reviewed by the City and addressed on an individual basis. Each project and action will comply with all applicable local, regional, State, and federal regulations associated with historic properties of religious and cultural significance, and inadvertent discovery of human remains, Native American cultural sites, and/or Native American burial sites and will obtain all required permits.

As discussed in Response to Comment A5-2, the City of Oakdale consulted with the Native American tribes consistent with NAHC recommendations and Sections 15086 and 65352.3 of the California Government Code. In addition, Policy NR-7.7 of the Natural Resources Element of the 2030 General Plan requires the consultation of appropriate organization and individuals early in the development process, including the Information Centers of the California Historical Resources Information System, Native American Heritage Commission, and Native American groups and individuals.

Public Agencies - Regional and Local Agencies

Letter A6. Modesto Irrigation District

Response to Comment A6-1

The commenter states that any discharge into the MID canal system must be reviewed and approved by MID for compliance with the limits of a 1942 discharge agreement with OID as well as the Clean Water Act.

Comment noted. Through its review of future projects and actions under the General Plan, CAP, CCSP, and SPSP, the City will ensure review, consultation, and approval by MID occurs. It should be noted that consultation with MID occurred during design and preparation of the proposed project.

Response to Comment A6-2

The commenter has no comment on domestic water.

Comment noted. No further response required.

Response to Comment A6-3

The commenter states that existing overhead and underground electric facilities within or adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department. The commenter then provides several utility requirements for implementation of the 2030 General Plan.

Comment noted. Through its review of future projects and actions under the General Plan, the City will ensure all electrical related improvements will occur in accordance with MID's standards and Electric Service Rules. In addition, all improvements will be subject to review, consultation, and approval by MID.

In addition, Policy PF-5.2 of the 2030 General Plan Public Facilities Element requires new development to only be approved if they are served with sufficient energy supply and infrastructure. Policy PF-5-12 also requires coordination with local energy providers to underground existing energy facilities.

Response to Comment A6-4

The commenter has no comment on irrigation and domestic water with respect to the CCSP.

Comment noted. No further response required.

Response to Comment A6-5

With respect to the CCSP, the commenter states that their electric engineering department has no comments at this time and that existing overhead and underground electric facilities within or

adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department.

Comment noted. Through its review of future projects and actions under the CCSP, the City will ensure all electrical related improvements will occur in accordance with MID's standards. In addition, all improvements will be subject to review, consultation, and approval by MID.

Response to Comment A6-6

The commenter has no comment on irrigation and domestic water with respect to the SPSP.

Comment noted. No further response required.

Response to Comment A6-7

With respect to the SPSP, the commenter states that their electric engineering department has no comments at this time and that existing overhead and underground electric facilities within or adjacent to proposed projects shall be protected or relocated as required by the District's Electric Engineering Department.

Comment noted. Through its review of future actions under the SPSP, the City will ensure all electrical related improvements will occur in accordance with MID's standards. In addition, all improvements will be subject to review, consultation, and approval by MID.

Response to Comment A6-8

The commenter has no comment on irrigation and domestic water with respect to the CAP.

Comment noted. No further response required.

Response to Comment A6-9

With respect to the CAP, the commenter states that their electric engineering department has no comments at this time and that proposed projects will be specifically addressed when improvement plans are submitted for development.

Comment noted. Through its review of future projects and actions under the CAP, the City will ensure that MID reviews and approves all electrical improvements, and that they are constructed to MID's standards.

Letter A7. Oakdale Irrigation Department

Response to Comment A7-1

The commenter provides a list of requirements that must be considered as individual projects and actions are implemented. The commenter also states that OID is currently the trustee for Improvement District #21, which provides the Twildo Avenue community with a potable water

source. When this community is annexed into the City as part of SPSP in the future, OID will no longer act as the trustee and will relinquish all responsibility for the community's domestic water system to the City.

Comment noted. All future projects and actions under the General Plan, CCSP, SPSP, and CAP will be addressed on an individual basis. Through its review of future projects and actions, the City will ensure that the developer/applicant consults with OID. All improvements to OID facilities, including changes to Adams Creek drain, will be reviewed and approved by OID, and completed to the District's standards.

Letter A8, San Joaquin Valley Air Pollution Control District

Response to Comment A8-1

The commenter summarizes air quality issues in the San Joaquin Valley and states that they appreciate the City's efforts to make land use decisions that reduce air quality impacts.

Comment noted. While this comment does not address the content or adequacy of the DEIR specifically, City decision makers will consider all comments when deciding on the proposed project.

Response to Comment A8-2

The commenter provides several recommendations to aid the City in coordinating with the San Joaquin Air Pollution Control District (APCD).

Comment noted. As future projects and actions move forward under the General Plan, CAP, CCSP, SPSP, coordination with the APCD will occur on an individual basis in order to meet applicable APCD regulations and requirements.

It should be noted that Section NR-3 Air Quality and Climate Change of the Natural Resources Element of the 2030 General Plan Update contains a policy that requires regional coordination with the San Joaquin Valley Air Pollution Control District.

Response to Comment A8-3

The commenter summarizes District Rule 9510 and details projects that would be subject to its requirements. The commenter then recommends demonstrating compliance with District Rule 9510 as future developments within the specific plans are identified.

Comment noted. As future projects and actions move forward under the CCSP and SPSP, coordination with the APCD will occur on an individual basis to ensure all regulations and requirements are met. Certain development projects under the CCSP and SPSP may not require further environmental review under CEQA, but would still require review by the City. Future projects that meet the applicability thresholds of APCD would be subject to District Rule 9510. Through the City's review of these projects, and consistent with proposed General Plan policy

(Section NR-3), they will ensure all future projects are consistent with District Rule 9510, and all applicable regulations and requirements are met prior to issuing the first building permit.

Letter A9. Stanislaus County Local Agency Formation Commission

Response to Comment A9-1

The commenter describes the General Plan's sphere of influence (SOI) and provides the definition of a SOI. The commenter then notes that a majority of land within the SOI is designated for agricultural uses in the City's General Plan.

Comment noted. This comment does not address the content or adequacy of the DEIR; thus, no further response is required.

Response to Comment A9-2

The commenter states that in previous correspondence with the City, Oakdale has noted it is concerned with development (other than agricultural uses) in the unincorporated areas outside its SOI and has indicated interest in ways to preclude such development. The commenter encourages the City to designate this area, the North County Corridor Overlay, as an "Area of Concern" instead. An "Area of Concern" is defined in LAFCO policy as a geographic area beyond the Sphere of Influence in which land use decisions or other governmental actions of one local agency (Stanislaus County as the "Acting Agency") impact directly or indirectly upon another local agency (the City of Oakdale as the "Concerned Agency"). LAFCO would then seek a formal commitment between Stanislaus County and the City of Oakdale to recognize the Area of Concern.

In response to the comment, the City will re-designate the North County Corridor Overlay as the Area of Concern. Neither designation authorizes future urban development under the General Plan. Rather, the Area of Concern designation formally recognizes that any development by the County would affect the City. As this change does not affect the environmental analysis contained in the DEIR, no revisions are necessary. However, several figures of the Oakdale 2030 General Plan and accompanying text will be modified so that the area south and west of the City Limits will now be designated as and called the Area of Concern. These changes will be reflected in the final adopted 2030 General Plan. The commenter also states that Planning Area 6, located north of Stanislaus River within the northern portion of the City, may be taken out of the City's Sphere of Influence when the SOI boundary is updated in the future. Comment noted. It is acknowledged that LAFCO will make SOI boundary determinations at the time of any application.

Response to Comment A9-3

The commenter is asking for clarification in the agricultural land acreages for the Planning Area identified in the DEIR as it appears different acreages are used.

Under the 2030 General Plan discussion for Impact 4.1-3 on page 4.1-32 of the DEIR, incorrect farmland acreages are referenced. These acreages are from information shown in Table 4.1-2 (FMMP 2010 City of Oakdale and Planning Area Farmlands) on page 4.1-4 of the DEIR, which

indicates there are actually 3,699.2 acres of Important Farmlands that include Prime Farmlands, Farmland of Statewide Importance, and Unique Farmland in the entire Planning Area. Of the 3,699.2 acres, 1,753 acres are Prime Farmlands. Table 4.1-7 (Summary of Impacts to Important Farmlands within the General Plan Planning Area) on page 4.1-33 of the DEIR shows different acreages (1,623.9 acreages of Important Farmlands, of which 1,321 acres are Prime Farmland). The acreages in these two tables are different because they are shown for different geographic boundaries. Table 4.1-2 shows Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands for the entire Planning Area. The Planning Area boundaries are shown on Figure 4.1-1 in the DEIR, and include all areas where the 2030 General Plan designates land use (e.g., CCSP, SPSP, Planning Areas 2, 5, and 8, and areas within the existing SOI) as well as the North County Corridor Overlay area. Table 4.1-7 shows these same farmland categories but only for the areas where land uses have been designated under the 2030 General Plan, which does not include the North County Overlay area.

The farmland acreages are corrected for the 2030 General Plan discussion for Impact 4.1-3 on page 4.1-32 of the DEIR. Please see Chapter 4 of this FEIR, "Minor Revisions to the DEIR" for the corrected text.

Response to Comment A9-4

The commenter summarizes that Policy NR-2.3 of the 2030 General Plan, and states that the policy leaves uncertainty as to when and if an agricultural land mitigation program will be established. The commenter notes that LAFCO is considering adoption of an agricultural mitigation policy, and encourages the City to retain the agricultural mitigation framework identified in CCSP and SPSP.

As previously discussed (in responses to comment letter A1), on September 26, 2012, Stanislaus LAFCO adopted an Agricultural Preservation Policy that requires preparation of a Plan of Agricultural Preservation and includes four strategies to minimize the loss of agricultural lands. Consistent with one of these policies, the DEIR has included Mitigation Measures 4.1.3a and 4.1.3b for development under CCSP and SPSP requiring agricultural mitigation at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance and Unique Farmlands to residential uses. Although this mitigation was previously included as part of the CCSP and SPSP framework, it is now explicitly stated as mitigation. This mitigation will be required on a project by project basis. With the adoption of LAFCO's Agricultural Preservation Policy, Policy NR-2.3 of the 2030 General Plan will now be revised to require preparation of a Plan of Agricultural Preservation in conjunction with any new Specific Plan adoption or annexation/Sphere of Influence modification. The Plan is required to outline how to minimize impacts to agricultural lands using one of the four strategies, consistent with the LAFCO policy.

Response to Comment A9-5

The commenter discusses the amount of Williamson Act contracted land in the Planning Area and summarizes how LAFCO addresses Williamson Act lands during changes to an SOI boundary or annexation.

Comment noted. This comment does not address the content or adequacy of the DEIR specifically; thus, no further response is necessary. However, City decision makers will consider all comments when deciding on approval of the proposed project and certification of the EIR. Please see Section 4.1 of the DEIR, "Land Use and Agricultural Resources" for a discussion of Williamson Act contracted lands within the Planning Area.

Response to Comment A9-6

The commenter summarizes the DEIR as it pertains to groundwater recharge and asks if there is a timeframe for when the implementation program requiring jurisdictional cooperation on preparation of groundwater management plan outlined in the 2030 General Plan will occur.

As noted by the commenter, on page 4.4-5 of the DEIR, a rough groundwater budget for the subbasin is described as follows: natural recharge is estimated to be 86,000 acre-feet per year (AFY), applied recharge is estimated to be 92,000 AFY, urban extraction is estimated to be 81,000 AFY, and agricultural extraction is estimated to be 145,000 AFY. Summing these values indicates an apparent net annual groundwater deficit of approximately 48,000 AFY. These values are, however, rough estimates of approximate average annual values. Due to uncertainty associated with the actual rates of recharge and pumping in the subbasin, and also due to recent and ongoing changes in groundwater basin management actions that have been taken or are in process within the subbasin, these values need to be further constrained before the potential for groundwater overdraft can be accurately determined. Additional factors may also affect groundwater levels in the subbasin. Therefore, although possible that conditions of overdraft are present, additional basin-wide analyses are needed to draw such conclusion.

Note that, whether or not the subbasin is determined to be in a state of overdraft, the impact analysis for groundwater levels contained in the DEIR indicates that continued declines could occur, and that such declines would be mitigated with implementation of General Plan Implementation Program PF-IP3. This measure provides for preparation, regular update, and adherence to the recommendations of a groundwater management plan for the City and surrounding areas and agencies. Implementation of this measure would be required even if a state of overdraft is not confirmed. It should be noted that Impact 4.9-3 of Section 4.9 of the DEIR, "Hydrologic Resources" beginning on page 4.9-30 analyzes the potential for depletion or interference with groundwater recharge from the proposed project. The impact discussion concludes that the project would have a significant and unavoidable impact on groundwater resources.

As shown on Figure 4.9-2 Groundwater Basin on page 4.9-4 of the DEIR, most of the City and Planning Area (generally south of the Stanislaus River) is located within the Modesto Groundwater Subbasin, while the area generally north of the River is located within the Eastern San Joaquin Groundwater Subbasin. An Integrated Regional Groundwater Management Plan (IRGMP) for the Modesto Subbasin was finalized in 2005 by the Stanislaus and Tuolomne Rivers Groundwater Basin Association. This Association is made up of the five water purveyors that serve the area – Modesto Irrigation District, Oakdale Irrigation District, and the Cities of Oakdale, Modesto, and Riverbank, as well as Stanislaus County. General Plan Implementation Program PF-IP3 is now revised to require the regular review and update of the IRGMP. In addition, Implementation

Program PF-IP3 has also been revised to require coordination with other water purveyors to prepare a groundwater management plan for the Eastern San Joaquin Subbasin within five years of adoption of the 2030 General Plan. These revisions to Implementation Program PF-IP3 do not affect the analysis and adequacy of the DEIR and no changes are necessary.

Response to Comment A9-7

The commenter summarizes their procedural requirements for an expansion of the City's SOI boundaries, which would require a meeting between LAFCO, the City of Oakdale, and Stanislaus County and preparation of a Municipal Services Review.

Comment noted. This comment does not address the content or adequacy of the DEIR specifically; thus, no revisions to the DEIR are necessary. However, City decision makers will consider all comments when deciding on whether to approve the proposed project and certify the DEIR.

Response to Comment A9-8

The commenter states that Figure 3-1 (Planning Boundaries) does not accurately reflect the City's existing SOI in the Oakdale Airport area.

The commenter is correct, and the City's existing SOI boundary will be modified to be coterminous with the City's existing City limits near the Oakdale Airport. Figures in the 2030 General Plan will be revised to reflect the area south of the Oakdale Airport to be only located within the City's future SOI. This entire area (i.e., Oakdale Airport and the area south of it now shown only within the City's future SOI) is designated as Airport under the 2030 General Plan, and no new housing or non-residential space is assumed to occur within this designation. As there are no changes to the development potential of this area, revising figures to show that this area is within the City's future SOI rather than existing SOI would not affect the environmental analysis presented in, or the adequacy of, the DEIR; thus, no revisions to the DEIR are necessary. All applicable figures in the final adopted 2030 General Plan will be revised to reflect the corrected existing SOI boundary.

Response to Comment A9-9

The commenter states that language in the Impact Analysis on page 4.1-32 of the DEIR is duplicated.

The commenter is correct in that page 4.1-32 contains duplicate language. Please see Chapter 4 of this FEIR, "Minor Revisions to the DEIR" for the corrected text.

Response to Comment A9-10

The commenter states that page 5-4's reference to the size of the "Primary Study Area" should state "16.6 square miles."

The commenter is correct in that the size of the "Primary Study Area" should state "16.6 square mile" on page 5-4. Please see Chapter 4 of this FEIR, "Minor Revisions to the DEIR" for the corrected text.

Individuals

Letter I1. Bill and Joy Bloomingcamp

Response to Comment I1-1

The commenter expresses concern regarding the North County Corridor alignment and how it will affect their property.

Please see Master Response #1 for a discussion of the North County Corridor project.

Response to Comment I1-2

The commenter suggests the NCC interchange should be in the City's SOI.

Comment noted. The project boundaries for the 2030 General Plan, CCSP and SPSP, as well as the City's future SOI and 2030 Planning Area have been established. Including the properties that could potentially accommodate the NCC alignment and interchanges located east of the City's existing and future SOI were not assumed as part of the proposed project (which affects the 2030 General Plan and SPSP) and not analyzed in the DEIR. Further land use planning may be necessary once the NCC alignment is selected, at which time the City would be open to accepting applications to land use, zoning, and SOI boundary changes. As discussed in detail in Master Response #1, the NCC is a separate project and its potential impacts will be evaluated under a separate environmental review process.

Response to Comment I1-3

The commenter suggests a zoning change to their property should they lose acreage due to construction of the NCC.

See the response to comment I1-2. As stated in this response to comment, the City would be open to accepting applications for zoning changes when the final NCC alignment is selected. This comment does not address the content or adequacy of the DEIR specifically; thus, no revisions to the DEIR are necessary.

Response to Comment I1-4

The commenter makes a comment about the potential location of the NCC interchange.

Please see Master Response #1 for a discussion of the North County Corridor project. It should be noted that this comment does not address the content or adequacy of the DEIR nor does it have any effect on the proposed project.

Letter I2. John P. Brichetto

Response to Comment I2-1

The commenter questions the location and number of roadway connections necessary for the northern portion of CCSP and how it will connect to the Future Specific Plan area located north.

Comment noted. As the comment is related to the design of the proposed circulation system for the CCSP and does not affect the environmental analysis contained in nor address the content of the DEIR, no further response is required. Further clarification regarding the potential locations of roadway connections from CCSP to the area north has been added to the CCSP.

Response to Comment I2-2

The commenter provides a comment regarding affordable housing requirements, and how it affects the CCSP.

Comment noted. This comment is regarding the CCSP, rather than the DEIR, and does not require a response in the FEIR. However, City decision makers will consider all comments when deciding on whether to approve the proposed project or certify the DEIR.

Response to Comment I2-3

The commenter would like the agricultural mitigation framework outlined in CCSP to be consistent with the Agricultural Mitigation Policy approved by LAFCO. As previously discussed, LAFCO approved this policy on September 26, 2012, and the agricultural mitigation framework has now been revised to be consistent with this policy. Please see response to comments A1-1 and A1-3.

Response to Comment I2-4

The commenter requests to review the CCSP Financing Plan.

Comment noted. The Financing Plan prepared for the CCSP is available for the public to review at the City offices located at 120 South Sierra Avenue, Oakdale, CA 95361. As this comment does not represent a substantive comment on the DEIR, no further response is necessary in the Final EIR. However, City decision makers will consider all comments when deciding on whether to approve the proposed project or certify the DEIR.

Letter I3. Brewster Burns

Response to Comment I3-1

The commenter is concerned with potential transportation issues due to land use changes in the 2030 General Plan and CCSP, within the vicinity of the existing Anderson Home development.

The reader is referred to Section 4.5 “Traffic and Circulation” and Appendix B “Traffic Technical Appendix.” A full traffic study and EIR analysis addressing potential impacts of the proposed

project was prepared. This analysis demonstrates what future traffic levels will be with buildout of the proposed project, and identifies mitigation measures to address traffic impacts.

The commenter also would like the area south of the existing Anderson Homes development to be zoned for single family uses. While this comment does not address the adequacy of the DEIR, all comments will be considered by the decision-makers.

Letter I4. Cheryl Folla

Response to Comment I4-1

The commenter represents the existing Anderson Home development, and is concerned with the proposed CCSP. A list of signatures indicating their opposition to the project is enclosed.

Comment noted. As this comment does not address the content or adequacy of the DEIR, no further response is required within the Final EIR. However, City decision makers will consider all comments when deciding on whether to approve the proposed project or certify the DEIR.

Response to Comment I4-2

The commenter states that they are representing the residents of the Anderson Home subdivision and that they have questions and concerns about the CCSP.

Comment noted. As this comment does not address the content or adequacy of the DEIR, no further response is required within the Final EIR. However, City decision makers will consider all comments when deciding on whether to approve the proposed project or certify the DEIR.

Response to Comment I4-3

The commenter expresses concern about the vagueness of the plan and the potential for commercial land uses in the area.

The reader is referred to Section 3.1.2 Use Flexibility of the CCSP. The CCSP incorporates Flex Use to allow the potential mixing of one or more uses on individual parcels. The Flex Use is assigned both a primary and secondary use, and development may occur exclusively as the primary use or the secondary use, or a mix of specified uses. A Flex Use parcel may develop with its primary use subject to the City's standard development review requirements. If the parcel develops with the secondary use or a mix of primary/secondary uses, Planning Commission approval of a Major Use Permit (pursuant to Section 36-20 of the Oakdale Zoning Code) would be required. Prior to approval, the Planning Commission has to find that: the proposed request furthers the intent of the CCSP; any potential impacts to the CCSP's planned infrastructure, services such as parks and schools, fee programs and assessment districts have been fully mitigated; and the proposed request is consistent with the EIR or subsequent environmental documentation has been completed in compliance with CEQA. Findings required to be made by the Planning Commission will ensure that all potential environmental impacts associated with development of Flex Use parcels as the primary, secondary, or a mix of uses will occur.

In addition, Section 5.6 Crane Crossing Specific Plan in Section 5 "Alternatives" of the DEIR analyzes the potential impacts if the FLEX/GC parcels are developed in accordance to the secondary use of high density residential, rather than the primary use of general commercial.

The reader is also referred to Section 4.5 "Traffic and Circulation" and Appendix B "Traffic Technical Appendix." A full traffic study and EIR analysis addressing potential impacts of the proposed project was prepared. This analysis demonstrates what future traffic levels will be with buildout of the proposed project, and identifies mitigation measures to address traffic impacts. The reader is also referred to Section 4.6 "Air Quality" and Section 4.7 "Noise" of the DEIR for an analysis on potential impacts to air quality and noise as a result of the proposed project.

Response to Comment I4-4

The commenter expresses concern about traffic and safety in the Anderson Home subdivision.

The reader is referred to Section 4.5 "Traffic and Circulation" and Appendix B "Traffic Technical Appendix" of the DEIR. A full traffic study and EIR analysis addressing potential impacts of the proposed project was prepared. This analysis demonstrates what future traffic levels will be with buildout of the proposed project, and identifies mitigation measures to address traffic impacts. Potential impacts to public safety associated with police protection are addressed in Section 4.3 "Public Services" of the DEIR.

Response to Comment I4-5

The commenter states that the plan allows for too much variation which makes it difficult to evaluate and that they would like more clarity on the plan.

The reader is referred to Response to Comment I4-3, above, for a discussion on Flex Uses. As discussed in this response to comment, findings required to be made by the Planning Commission will ensure that all potential environmental impacts associated with development of Flex Use parcels as the primary, secondary, or a mix of uses will occur.

Letter I5. James D. Godkin

Response to Comment I5-1

The commenter expresses opposition and concern regarding the SPSP.

Comment noted. Please see Master Response #1 for a discussion of the North County Corridor. As discussed in Master Response #1, the North County Corridor is a separate project undergoing a separate environmental review process. Although one of the North County Corridor alignments being considered may traverse the SPSP site, it is not a part of the SPSP project. The NCC project is managed by a separate entity, the North County Corridor Transportation Expressway Authority.

Letter I6. Vicki C. Godkin

Response to Comment I6-1

The commenter expresses opposition and concern regarding the SPSP.

Comment noted. Please see Master Response #1 for a discussion of the North County Corridor. As discussed in Master Response #1, the North County Corridor is a separate project undergoing a separate environmental review process. Although one of the North County Corridor alignments being considered may traverse the SPSP site, it is not a part of the SPSP project. The NCC project is managed by a separate entity, the North County Corridor Transportation Expressway Authority.

Letter I7. Robert and Judith Moore

Response to Comment I7-1

The commenter states that the plan would be a gross misuse of agricultural land in an area that prides itself on income from agriculture.

The General Plan is a long range plan for the City of Oakdale that will guide future growth and conservation. For planning purposes, the General Plan established 2030 as the horizon year or buildout of the plan, although the new General Plan can accommodate growth and includes a vision of the future beyond 2030. Based on historical growth patterns and future growth projections prepared by the State Department of Finance, State Employment Development Department, Stanislaus County Council of Governments, and by the General Plan team, the City's existing vacant land is not enough to accommodate future growth anticipated to occur in Oakdale. As the vacant land within the City gets developed, development may expand into areas outside of the City Limits and into Future Specific Plan areas (Planning Areas 2, 5, and 8).

There are several policies in the 2030 General Plan that support development of infill parcels first. Specifically, Policies LU-7.1 and LU-7.2 promote development of vacant and underutilized lands within the City prior to entertaining annexations of new growth areas, and to support annexation proposals that are adjacent to and provide for logical expansion of the City. Policy LU-7.5 also requires preparation and approval of a specific plan for each future growth and annexation area to comprehensively plan those areas in an orderly fashion. In addition, Policy LU-1.5 of the Land Use Element gives priority to the development of infill parcels and redevelopment of economically underutilized properties to accommodate a portion of projected future growth. Policy LU-4.5 of the Land Use Element also promotes reuse if vacant, underutilized, and inefficient commercial uses.

The reader is also referred to Section 4.1 of the DEIR for a full analysis of agricultural related impacts, and mitigation measures.

Response to Comment I7-2

The commenter states that the City's current wastewater treatment facility would not be adequate for the proposed area of expansion and that the City cannot pay for expansion.

Please see Section 4.4 "Utilities" of the DEIR for an analysis of wastewater treatment capacity. Several policies in the 2030 General Plan Public Facilities Element requires the City to regularly review and update the City's Sewer Master Plan and capital improvement tools to ensure adequate wastewater treatment. Additionally, the City's Capital Facilities Fee Program will ensure that future project applicants will contribute a fair share fee for any required future utility infrastructure improvements, including the wastewater treatment plant.

Response to Comment I7-3

The commenter states that there are currently large areas of undeveloped and underdeveloped land within the City limits and asks why the City needs to expand.

Please see Response to Comment I7-1, above, for a discussion of infill capacity and future population growth anticipated in Oakdale.

Response to Comment I7-4

The commenter states that the infrastructure in the City is in disrepair and asks how expanding the City's growth boundaries will help.

Comment noted. As this comment does not address the content or adequacy of the DEIR, no further response is required. However, City decision makers will consider all comments when deciding on whether to approve the proposed project or certify the EIR.

Response to Comment I7-5

The commenter asks where water will come from for future development and states that OID is trying to sell water to another city.

Please see Section 4.4, "Utilities" of the DEIR for a discussion of the City's existing water supply, and how future growth in Oakdale will be served. This analysis begins on page 4.4-26 of the DEIR, and relies on the water analysis contained in the Oakdale Urban Water Management Plan (UWMP) adopted in 2009, as shown in Attachment 1 of this Final EIR. As discussed in the analysis in the DEIR and the UWMP, adequate water supply exists to serve future development.

Response to Comment I7-6

The commenter states that the City has had to reduce services and asks how future development will be served.

Please see Section 4.3, "Public Services and Safety" and Section 4.4, "Utilities" of the DEIR for a discussion on how future public services and utilities will be provided by the City. As discussed in these sections of the DEIR, all future development will be required to pay the City's Capital Facilities Fee, which ensures the applicants will contribute a fair share fee for any required capital facilities. In addition, the General Plan requires all new development to construct, dedicate, and/or pay its fair share contribution to water, wastewater, and storm drain facilities.

Response to Comment I7-7

The commenter does not want their property to be in the City and states that developers are being favored over property owners.

Annexation of land is governed by the Cortese-Knox-Hertzberg Local Government Reorganization Act (Government Code Section 56000 et seq.). In Stanislaus County, the process is overseen by the Stanislaus Local Agency Formation Commission (LAFCO). Please refer to LAFCO for information regarding annexation protest procedures:

http://www.stanislauslafco.org/info/PDF/forms/AnnexPro.pdf).

As the comment relates to the annexation process and not the adequacy of the DEIR, no further response is required in the Final EIR.

Letter I8. EE Waggoner

Response to Comment I8-1

The commenter expresses concern over the North County Corridor and its potential impacts on properties near Wamble Road.

Please see Master Response #1 at the beginning of this chapter for a discussion of the North County Corridor. This comment does not address the content or adequacy of the DEIR specifically; thus, no revisions to the DEIR are necessary.

Letter I9. Private Citizen

Response to Comment I9-1

The commenter expresses opposition to the proposed project for a variety of reasons.

Comment noted. As this comment does not address the content or adequacy of the DEIR, no further response is necessary. However, City decision makers will consider all comments when deciding on whether to approve the proposed project and certify the DEIR.

CHAPTER 4
Minor Revisions to the Draft Environmental Impact Report

This chapter contains minor revisions and additions to the DEIR, issued in July 2012. None of the changes identified in this chapter constitutes significant new information or results in any new significant impacts.

4.1 Revisions

Revisions to the Draft EIR are listed in the order they appear. New text is indicated by underline and deletions are shown in ~~strikethrough~~.

Changes to Chapter 2, Summary

Impact 4.1.3 on page 2-10 of the Summary Table is revised to include the following two mitigation measures:

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impact 4.1.3: The proposed project would result in the substantial conversion of important farmlands (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) to non-agricultural uses and would involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses.			
2030 General Plan	PS	None Feasible	SU
CCSP	PS	**Measure 4.1.3a:** Agricultural mitigation within the CCSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be	SU

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.~~None Feasible~~	
	SPSP	PS	**Measure 4.1.3b:** Agricultural mitigation within the SPSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.~~None Feasible~~	SU

Impact 4.5.10 and Impact 4.5.13 on page 2-19 of the Summary Table is revised to correctly reflect the level of significance after mitigation:

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
Impacts 4.5.10, 4.5.13: The proposed project would result in a substantial increase in vehicular traffic. This would result in a significant impact to various intersections and road segments within the study area.			
2030 General Plan with NCC Southern Alignment (Impact 4.5.10)	PS	None Feasible	~~LTS~~SU
2030 General Plan with NCC Northern Alignment (Impact 4.5.13)	PS	None Feasible	~~LTS~~SU

Impact 4.5-7 on page 2-16 of the Summary Table is revised to add the level of significance before and after mitigation:

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
2030 General Plan (Impact 4.5.7)	PS	Implement **Measures 4.5.1c to 4.5.1i, 4.5.4c to 4.5.4f, 4.5.4h** **Mitigation Measure 4.5.7a:** This impact could be mitigated by adding a southbound right-turn lane and modifying signal operations at the intersection to include right-turn overlap phasing on the northbound and southbound approaches. This mitigation would improve operations in the PM peak hour from LOS F to LOS D. Funding for this improvement could come from development impact fees. **Mitigation Measure 4.5.7b:** This impact could be mitigated by modifying the traffic signal timings at F Street (SR 108) / Willowood Drive. This mitigation would improve operations from unacceptable LOS D to acceptable LOS C. Funding for this relatively low-cost improvement could come from development impact fees. **Mitigation Measure 4.5.7c:** This impact could be mitigated by widening F Street (SR 108) to create an additional lane in each direction at the intersection. This improvement is partially funded by the City's CIP; if full funding could be identified, implementation of this mitigation would reduce the impact to less than significant. However, this is a Caltrans facility and Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard at this intersection from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria. **Mitigation Measure 4.5.7d:** This impact could be mitigated by modifying the intersection at F Street (SR 108/SR 120) / South Stearns Road to install a traffic signal and add the following lanes: ▪ Eastbound approach – left-turn lane, through lane, and right-turn lane ▪ Westbound approach – through lane ▪ Northbound approach – left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS D or better during both peak hours. These improvements could be primarily funded by developer impact fees from the Sierra Pointe Specific Plan. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program. **Mitigation Measure 4.5.7e:** This impact could be mitigated by installing a traffic signal at SR 108/SR 120 / Wamble Road and adding left-turn lanes on the eastbound and westbound approaches. Implementation of this mitigation measure would	SU

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		reduce the impact to less than significant. **Mitigation Measure 4.5.7f:** This impact could be mitigated by modifying the traffic signal timings. Implementation of this mitigation measure would reduce delay at this intersection to LOS C levels during the PM peak hour. **Mitigation Measure 4.5.7g:** The addition of the following lanes at Yosemite Avenue / J Street would reduce delay at this intersection to LOS C during both the AM and PM peak hours: ▪ Westbound approach – left-turn lane ▪ Northbound approach – through lane and right-turn lane ▪ Southbound approach – through lane The width of the roadway on the northbound approach is sufficient to accommodate the right-turn lane. However, the other improvements are considered infeasible due to physical constraints. Adopting General Plan Policy M-2.7 would reduce the LOS standard at this intersection from LOS C to LOS F. **Mitigation Measure 4.5.7h:** The addition of a southbound right-turn lane at Yosemite Avenue / Greger Street/Wakefield Drive would reduce delay at this intersection to LOS C levels during the PM peak hour. This improvement is considered feasible. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to the currently adopted threshold (the 2015 General Plan) unless the physical improvement described above is constructed. **Mitigation Measure 4.5.7i:** This impact could be mitigated by modifying the intersection at Greger Street / Kaufman Road to install a traffic signal. This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program. **Mitigation Measure 4.5.7j:** This impact could be mitigated by modifying the intersection at Fifth Avenue / J Street to install a traffic signal and changing the configuration to include a left-turn lane and a shared through/right-turn lane on each approach. This mitigation is considered feasible and would likely only require minor increases in right-of-way and/or parking restrictions. This would improve operations from unacceptable LOS F to acceptable LOS D during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program. **Mitigation Measure 4.5.7k:** This impact could be mitigated by converting the Maag Avenue / Sierra Road intersection to all-way stop control. This mitigation is considered feasible. This would improve	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance after Mitigation
		operations from unacceptable LOS F to acceptable LOS B during the PM peak hour. **Mitigation Measure 4.5-7l:** This impact could be mitigated by modifying the intersection at South Stearns Road / Sierra Road to install a traffic signal and the following lanes: ▪ Eastbound approach – Left-turn lane and right-turn lane ▪ Westbound approach- Left-turn lane ▪ Southbound approach – Left-turn lane and right-turn lane ▪ Northbound approach- Left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. These improvements could be primarily funded by developer impact fees. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program. **Mitigation Measure 4.5.7m:** This impact could be mitigated by widening Crane Road to four lanes. A portion of this widening is already in place. This improvement is partially funded by the City's CIP. **Mitigation Measure 4.5.7n:** This impact could be mitigated by improving Maag Avenue from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS E to LOS D. **Mitigation Measure 4.5.7o:** This impact could be mitigated by widening South Stearns Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant. **Mitigation Measure 4.5.7p:** This impact could be mitigated by widening Wamble Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant. **Mitigation Measure 4.5.7q:** This impact could be mitigated by improving J Street from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS D to LOS C. **Mitigation Measure 4.5.7r:** This impact could be mitigated by widening Greger Street to a two-lane arterial. Implementation of this mitigation measure would improve operations from LOS F to LOS D. **Mitigation Measure 4.5.7s:** This impact could be mitigated by improving Sierra Road to a two-lane arterial. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS C to LOS D.	

Changes to Chapter 3.0, Project Description

The following paragraph is added under the Public Services and Infrastructure heading on page 3-29 of the DEIR as follows:

The following information related to water, wastewater, and storm drain infrastructure is from the Utility Master Plans (Water Master Plan, Wastewater Master Plan, and Strom Drain Master Plan) prepared specifically for the Crane Crossing Specific Plan.

The following paragraph is added under the Public Services and Infrastructure heading on page 3-43 of the DEIR as follows:

The following information related to water, wastewater, and storm drain infrastructure is from the Utility Master Plans (Water Master Plan, Wastewater Master Plan, and Strom Drain Master Plan) prepared specifically for the Sierra Pointe Specific Plan.

Changes to Section 4.1, Land Use and Agricultural Resources

The Impact Analysis on page 4.1-32 of the DEIR is revised as follows:

A primary impact to the City agricultural lands includes the loss of productive agricultural lands due to the conversion of important farmlands (i.e., Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) to other uses. Future growth resulting from implementation of the proposed 2030 General Plan would result in both the direct and indirect conversion of additional important farmlands to urban and other non-farming uses that include residential, commercial, and industrial uses. Conversion of important farmlands under the proposed project is summarized in **Table 4.1-7**. Development under the CAP could result in renewable energy infrastructure such as solar hot water heating and photovoltaic system but these would primarily occur on rooftops of existing or new buildings and be consistent with the 2030 General Plan land uses. In keeping with the primary objectives of the 2030 General Plan, the majority of impacts to important farmlands will occur within the future growth areas (i.e., Future Specific Plan areas) of the City.

According to the 2010 Farmland Mapping and Monitoring Program (FMMP) report, the Planning Area contains ~~4,147~~3,699.2 acres of agricultural land, of which 1,753.1 acres or approximately 47~~2~~% are designated as prime agricultural land with the highest-productivity soils.

~~A primary impact to City agricultural lands includes the loss of productive agricultural lands due to the conversion of important farmlands (i.e., Prime Farmland, Unique Farmland, and Farmland of Statewide Importance) to other uses. Future growth resulting from implementation of the proposed project would result in both the direct and indirect conversion of additional important farmlands to urban and other non-farming uses. Conversion of important farmlands under the proposed project is summarized in **Table 4.1-7**.~~

The Impact Analysis on page 4.1-33 of the DEIR is revised as follows:

NR-2.2 would encourage continued agricultural production in the specific plan areas prior to their development.~~, and~~ NR-2.3 ~~would explore establishing an agricultural mitigation~~ requires preparation and adoption of a Plan for Agricultural Preservation consistent with the Stanislaus County LAFCO Agricultural Preservation Policy to minimize the loss of agricultural land in conjunction with any new Specific Plan adoption or annexation/SOI modification. One of the strategies consistent with the LAFCO Policy may require permanent protection of similar quality farmland at a 1:1 ratio for conversion of Prime Farmland, Farmland of Statewide Importance and Unique Farmland (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses. ~~program to offset the loss conversion of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program), to residential uses. Such a program should require the permanent protection of similar quality farmland elsewhere at a 1:1 ratio of the amount of farmland converted for residential uses to the amount of farmland protected.~~

A new mitigation measure has been added for the CCSP under the Mitigation Measures heading on page 4.1-36 of the DEIR as follows:

Mitigation Measures

~~No additional feasible mitigation is currently available, and this impact would be considered ***significant and unavoidable***.~~

> **Measure 4.1.3a:** Agricultural mitigation within the CCSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.
>
> **Impact Significance After Mitigation:** Significant and Unavoidable.

A new mitigation measure has been added for the SPSP under the Mitigation Measures heading on page 4.1-38 of the DEIR as follows:

Mitigation Measures

~~No additional feasible mitigation is currently available, and this impact would be considered ***significant and unavoidable***.~~

> **Measure 4.1.3b:** Agricultural mitigation within the SPSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment

of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.

Impact Significance After Mitigation: Significant and Unavoidable.

The Cumulative Impact Analysis on page 4.1-42 of the DEIR is revised as follows:

Most notably, Policy NR-2.2 would encourage continued agricultural production in the specific plan areas prior to their development., and Policy NR-2.3 would explore establishing an agricultural mitigation requires preparation and adoption of a Plan for Agricultural Preservation consistent with the Stanislaus County LAFCO Agricultural Preservation Policy to minimize the loss of agricultural land in conjunction with any new Specific Plan adoption or annexation/SOI modification. One of the strategies consistent with the LAFCO Policy may require permanent protection of similar quality farmland at a 1:1 ratio for conversion of Prime Farmland, Farmland of Statewide Importance and Unique Farmland (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses. would explore the feasibility of creating an agricultural land mitigation program to offset the loss of farmland due to development.

Changes to Section 4.4, Utilities

The first sentence of the third paragraph on page 4.4-1 is revised as follows:

The broader topic of water resources (including water quality, regional hydrology, and flooding issues) is more fully described in Section 4.911 "Hydrologic Resources Hydrology and Water Quality" of this document.

The following two sentences are added to the end of the first paragraph on page 4.4-4:

There is approximately 92,000 AFY of applied water recharge. Annual urban and agricultural extractions are estimated to be 81,000 and 145,000 AFY, respectively. Summing these values indicates a potential net annual groundwater deficit of approximately 48,000 AFY. Although possible that conditions of overdraft are present, additional basin-wide analyses are needed to draw such conclusion.

The last paragraph on page 4.4-21 has been revised as follows:

Table 4.4-3 provides a summary of the City's sole water supply source. As discussed in the 2009 UWMP, it is not presently known whether or not the aquifer from which the City draws its water supply is in a state of overdraft. However, The aquifer has not been identified by DWR as being overdrafted, and is not adjudicated. However, as set forth in Section 4.9 of this document, for purposes of the hydrologic impact analysis, the possible net annual groundwater deficit is considered a potentially significant impact. Because the underlying groundwater basin is not adjudicated, and because groundwater withdrawals are not otherwise explicitly regulated under California law, the City maintains no applicable water rights, permits, licenses, or annual entitlements.

The third paragraph under the heading, "Water Supply and Delivery," has been revised as follows:

Implementation of the proposed project would include implementation of the following General Plan policies, which would help to reduce or minimize the City's contributions to reduced groundwater availability in the vicinity of the project area: PF-1.1 to PF-1.3, PF-1.5 to PF-1.9, PF-1.12 to PF-1.15, and NR-4.2. These policies include provisions to support efforts toward sustainable extraction of groundwater, regional coordination regarding groundwater management, requirements for new development, and water conservation measures including future consideration of recycled water, site design measures, water conservation programs, and public education. In addition, Implementation Program PF-IP3 requires coordination with the surrounding jurisdictions and applicable agencies to prepare a regional groundwater management plan for the East San Joaquin Groundwater Subbasin, and regularly review and update the Integrated Regional Groundwater Management Plan for the Modesto Subbasin to protect groundwater quality and prevent overdraft conditions.

Changes to Section 4.5, Transportation and Circulation

Roadway segment 8, Yosemite Avenue/Albers Road between Greger Street/Wakefield Drive and Patterson Road, under Impact 4.5.1 on page 4.5-44 of the DEIR has been revised as follows:

> **Significance after Implementation of Mitigation:** While the proposed General Plan Policy M-2.6 would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to the currently adopted threshold (the 2015 General Plan) unless the widening described above is constructed. Implementation of Mitigation Measure 4.5.1~~j~~h would reduce this impact to ***less than significant.***

The discussion under Impact 4.5.9 for the 2030 General Plan and Table 4.5-22 on page 4.5-81 of the DEIR has been revised as follows:

Impact Summary: Existing Plus 2030 General Plan

Table 4.5-22 summarizes the potentially significant impacts for the Existing Plus 2030 General Plan Buildout scenario. Ten~~Eleven~~ potentially significant intersection impacts and eight roadway impacts can be mitigated with capacity improvements to less-than-significant levels. Three roadway impacts would remain significant and unavoidable within the City's jurisdiction. The remaining 16 impacts (three intersection and thirteen roadway segments) remain significant and unavoidable because they occur outside the City's jurisdiction and the City cannot guarantee implementation of mitigation measures.

TABLE 4.5-22
POTENTIALLY SIGNIFICANT IMPACTS – EXISTING PLUS 2030 GENERAL PLAN BUILDOUT

	Resultant Level of Significance		
		Significant and Unavoidable	
Location	**Less than Significant with Capacity Improvements[1]**	**Within Oakdale's Jurisdiction**	**Outside Oakdale's Jurisdiction**
Intersections			
1. F Street (SR 108) / Crane Road	X		
2. F Street (SR 108) / Willowood Drive	X		
3. F Street (SR 108) / Oak Avenue			X
4. F Street (SR 108) / Yosemite Avenue			X
5~~7~~. F Street (SR 108/SR 120) / South Stearns Road	X		
6~~8~~. SR 108/SR 120 / Wamble Road			X
7~~10~~. Yosemite Avenue / A Street	X		
8~~12~~. Yosemite Avenue / J Street	~~X~~	X	
9~~13~~. Yosemite Avenue / Greger Street/Wakefield Drive	X		
10~~24~~. Greger Street/Kaufman Road	X		
11~~25~~. J Street / Fifth Avenue	X		
12~~27~~. J Street / Maag Avenue	X		
13~~28~~. Sierra Road / Maag Avenue	X		
14~~30~~. Sierra Road / South Stearns Road	X		

The Summary Table on pave 4.5-99 of the DEIR is revised as follows:

Impact 4.5.10:	**The proposed project would result in a substantial increase in vehicular traffic. This would result in a significant impact to various intersections and road segments within the study area.**
SU	**Level of Significance Before Mitigation:** *Potentially Significant*
	Required Additional Mitigating Policies and Implementation Programs: *None Feasible*
	Resultant Level of Significance: *~~Less Than Significant~~ Significant and Unavoidable*

The Summary Table on pave 4.5-108 of the DEIR is revised as follows:

Impact 4.5.13: The proposed project would result in a substantial increase in vehicular traffic. This would result in a significant impact to various intersections and road segments within the study area.	
SU	**Level of Significance Before Mitigation:** *Potentially Significant*
	Required Additional Mitigating Policies and Implementation Programs*: None Feasible*
	Resultant Level of Significance: ~~*Less Than Significant*~~ *Significant and Unavoidable*

Changes to Section 4.9, Hydrologic Resources

The following paragraph is added under the heading titled "Local" under Section 4.9.3 Regulatory Setting on page 4.9-22 of the DEIR as follows:

Oakdale Irrigation District

In November, 2012, OID released a draft Agricultural Water Management Plan (AWMP), in accordance with the Water Conservation Act of 2009, which requires all agricultural water suppliers to prepare and adopt an AWMP prior to 2013. The draft AWMP also provides for the implementation of certain efficient water management practices, as required by state law. The AWMP provides a discussion of relevant background information on OID, its operations, and its service area, provides an inventory of OID water supplies, discloses OID's water balance, provides for effects associated with climate change, implements efficient water management practices, and provides a summary of proposed actions and an implementation schedule pursuant to state requirements and OID goals. A finalized version of the draft AWMP is anticipated to be completed and approved by December 31, 2012.

The first paragraph on page 4.9-31 of the DEIR, under the discussion for Impact 4.9-3, is revised to read as follows:

The Natural Resources and Public Facilities Elements of the proposed project contain several policies that address protection of groundwater recharge areas by minimizing impervious surfaces and through site design. Specifically, Policy NR-4.2 addresses preparation and regular updates of ~~a~~ regional groundwater management plans to support sustainable management of groundwater resources. Policy NR-4.3 supports the preservation of areas that provide important groundwater recharge benefits, while Policy PF-3.11 requires new development to incorporate various stormwater quality Low Impact Design (LID) Criteria, one of which is the use of permeable or porous pavements in support of impervious surface reduction. Water conservation policies PF-1.11 through PF-1.14 seek to minimize water consumption associated with planned growth. Implementation Programs PF-1 requires the City to regularly monitor and report on the quality and quantity of local groundwater. Implementation Programs PF-2 and NR-3 require the City to participate with a variety of regional entities (i.e., Stanislaus County, Oakdale Irrigation District,

etc.) to prepare, regularly review and update, and implement ~~a~~ regional ground water management plans.

Changes to Chapter 5, Alternatives

The second paragraph under section 5.5.1 on page 5-4 of the DEIR is revised to read as follows:

The currently adopted 2015 General Plan allows for a full range of urban uses within the 16.6 square mile~~acre~~ Primary Study Area (shown in Figure 3-4 Adopted General Plan Land Use), which includes the City, its sphere of influence (SOI), and unincorporated County land.

CHAPTER 5
Oakdale 2030 General Plan and Climate Action Plan Mitigation Monitoring and Reporting Program

5.1 Introduction

The purpose of this Mitigation Monitoring and Reporting Program (MMRP) is to describe the City of Oakdale's roles and responsibilities in the mitigation monitoring process for the proposed project, pursuant to CEQA Guidelines Section 15097 and Public Resources Code Section 21081.6.

A reporting and monitoring program ensures that measures adopted to reduce or avoid significant environmental impacts are implemented. It is a working guide to facilitate not only the implementation of mitigation measures, but also the monitoring, compliance, and reporting activities of the City of Oakdale. The MMRP includes a description of the requirements of CEQA and a compliance checklist. The intent of the MMRP is to prescribe and enforce a means for properly and successfully implementing the mitigation measures as identified within the EIR for this project.

5.2 Compliance Checklist

This MMRP is intended to be used by City staff and mitigation monitoring personnel to ensure compliance with the approved mitigation measures during all phases of project implementation. The mitigation measures identified in this MMRP were identified in the EIR prepared for the project. Mitigation is defined by CEQA Guidelines Section 15370 as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action.
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment.
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project.
- Compensates for the impact by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures. Monitoring and documenting the implementation of mitigation measures

will be coordinated by the City of Oakdale. **Table 5-1** identifies the mitigation measure, the monitoring action for the mitigation measure, the responsible party for the monitoring action, and timing of the monitoring action. The City of Oakdale will be responsible for fully understanding and effectively implementing the mitigation measures contained within the MMRP.

5.3 Mitigation Monitoring Program

Table 5-1 indicates the mitigation measure number along with the mitigation measure text consistent with the impact discussion presented in the EIR. Additionally, it identifies the agency or individual responsible for the implementation and monitoring of the measure, the timing for implementation of the mitigation or monitoring actions, and an area for the assigned inspector to verify compliance. The following mitigation measures apply to all development citywide associated with the Oakdale 2030 General Plan. Additional mitigation measures apply to development under the Crane Crossing Specific Plan (CCSP) and Sierra Pointe Specific Plan (SPSP). Please see the CCSP MMRP and the SPSP MMRP, as appropriate, for the mitigation measures that apply to development in those specific plan areas. The 2030 General Plan mitigation measures that apply citywide have been incorporated into the CCSP MMRP and SPSP MMRP to avoid the need to separately reference this document.

TABLE 5-1
OAKDALE 2030 GENERAL PLAN AND CAP MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Transportation and Circulation			
Measure 4.5.1c: This impact could be mitigated by widening SR 108 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next regional transportation plan (RTP).	
Measure 4.5.1d: This impact could be mitigated by widening F Street (SR 108) to create an additional through lane in each direction. Implementation of this mitigation measure would reduce the impact to less than significant. This improvement is partially funded by the City's Capital Improvement Program (CIP). Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	
Measure 4.5.1e: This impact could be mitigated by widening SR 108/SR 120 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1f: This impact could be mitigated by widening Valley Home Road (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	
Measure 4.5.1g: This impact could be mitigated by widening Yosemite Avenue (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1h: This impact could be mitigated by widening Yosemite Avenue/Albers Road to four lanes. This improvement is partially funded by the City's CIP. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F.	Public Works Department	CIP timing to be coordinated with buildout of CCSP.	
Measure 4.5.1i: This impact could be mitigated by widening Patterson Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.4c: Converting the intersection of Maag Avenue / J Street to all-way stop control would reduce delay at this intersection to LOS C levels during the AM peak hours.			
Measure 4.5.4d: This impact could be mitigated by widening this segment of F Street (SR 108/SR 120) to create an additional travel lane in each direction. This improvement is considered feasible is a planned Caltrans improvement. Funding is available from the City's CIP and Caltrans' Regional Surface Transportation Program (RSTP).	Public Works Department	City shall monitor Caltrans project planning.	
Measure 4.5.4e: This impact could be mitigated by widening Warnerville Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	

TABLE 5-1
OAKDALE 2030 GENERAL PLAN AND CAP MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.5.4f: This impact could be mitigated by improving South Stearns Road from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS F to LOS D.	Public Works Department	City shall consider proposed improvements as part of the next Capital Improvement Program (CIP).	
Measure 4.5.4h: This impact could be mitigated by widening Sierra Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7a: This impact could be mitigated by adding a southbound right-turn lane and modifying signal operations at the intersection to include right-turn overlap phasing on the northbound and southbound approaches. This mitigation would improve operations in the PM peak hour from LOS F to LOS D. Funding for this improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7b: This impact could be mitigated by modifying the traffic signal timings at F Street (SR 108) / Willowood Drive. This mitigation would improve operations from unacceptable LOS D to acceptable LOS C. Funding for this relatively low-cost improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7c: This impact could be mitigated by widening F Street (SR 108) to create an additional lane in each direction at the intersection. This improvement is partially funded by the City's CIP; if full funding could be identified, implementation of this mitigation would reduce the impact to less than significant. However, this is a Caltrans facility and Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard at this intersection from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	
Mitigation Measure 4.5.7d: This impact could be mitigated by modifying the intersection at F Street (SR 108/SR 120) / South Stearns Road to install a traffic signal and add the following lanes: ▪ Eastbound approach – left-turn lane, through lane, and right-turn lane ▪ Westbound approach – through lane ▪ Northbound approach – left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS D or better during both peak hours. These improvements could be primarily funded by developer impact fees from the Sierra Pointe Specific Plan. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7e: This impact could be mitigated by installing a traffic signal at SR 108/SR 120 / Wamble Road and adding left-turn lanes on the eastbound and westbound approaches. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7f: This impact could be mitigated by modifying the traffic signal timings. Implementation of this mitigation measure would reduce delay at this intersection to LOS C levels during the PM peak hour.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	

TABLE 5-1
OAKDALE 2030 GENERAL PLAN AND CAP MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Mitigation Measure 4.5.7g: The addition of the following lanes at Yosemite Avenue / J Street would reduce delay at this intersection to LOS C during both the AM and PM peak hours: ▪ Westbound approach – left-turn lane ▪ Northbound approach – through lane and right-turn lane ▪ Southbound approach – through lane The width of the roadway on the northbound approach is sufficient to accommodate the right-turn lane. However, the other improvements are considered infeasible due to physical constraints. Adopting General Plan Policy M-2.7 would reduce the LOS standard at this intersection from LOS C to LOS F.	Public Works Department	Right turn lane shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7h: The addition of a southbound right-turn lane at Yosemite Avenue / Greger Street/Wakefield Drive would reduce delay at this intersection to LOS C levels during the PM peak hour. This improvement is considered feasible. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to the currently adopted threshold (the 2015 General Plan) unless the physical improvement described above is constructed.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7i: This impact could be mitigated by modifying the intersection at Greger Street / Kaufman Road to install a traffic signal. This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7j: This impact could be mitigated by modifying the intersection at Fifth Avenue / J Street to install a traffic signal and changing the configuration to include a left-turn lane and a shared through/right-turn lane on each approach. This mitigation is considered feasible and would likely only require minor increases in right-of-way and/or parking restrictions. This would improve operations from unacceptable LOS F to acceptable LOS D during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7k: This impact could be mitigated by converting the Maag Avenue / Sierra Road intersection to all-way stop control. This mitigation is considered feasible. This would improve operations from unacceptable LOS F to acceptable LOS B during the PM peak hour.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5-7l: This impact could be mitigated by modifying the intersection at South Stearns Road / Sierra Road to install a traffic signal and the following lanes: ▪ Eastbound approach – Left-turn lane and right-turn lane ▪ Westbound approach- Left-turn lane ▪ Southbound approach – Left-turn lane and right-turn lane ▪ Northbound approach- Left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. These improvements could be primarily funded by developer impact fees. Additionally, the City's	Public Works Department	Improvements shall be considered as part of the next CIP.	

TABLE 5-1
OAKDALE 2030 GENERAL PLAN AND CAP MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.			
Mitigation Measure 4.5.7m: This impact could be mitigated by widening Crane Road to four lanes. A portion of this widening is already in place. This improvement is partially funded by the City's CIP.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7n: This impact could be mitigated by improving Maag Avenue from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS E to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7o: This impact could be mitigated by widening South Stearns Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7p: This impact could be mitigated by widening Wamble Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7q: This impact could be mitigated by improving J Street from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS D to LOS C.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7r: This impact could be mitigated by widening Greger Street to a two-lane arterial. Implementation of this mitigation measure would improve operations from LOS F to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7s: This impact could be mitigated by improving Sierra Road to a two-lane arterial. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS C to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Noise			
Measure 4.7.3a: The City shall require the use of noise-reducing pavement to the extent feasible on noise-impacted street segments, including but not limited to: ▪ Crane Road south of F Street ▪ Pontiac Street from Crane Road to Oak Avenue ▪ Greger Street from Crane Road to Yosemite Avenue ▪ Sierra Road from Yosemite Avenue to Stearns Road ▪ Maag Avenue south of F Street ▪ River Road west of Yosemite Avenue ▪ Wamble Road south of SR120/SR 108 ▪ Warnerville Road east of Smith Road ▪ G Street west of Yosemite Avenue ▪ I Street west of Yosemite Avenue	Planning Division	Incorporation of feasible noise-reducing pavement specifications shall be considered for future resurfacing/reconstruction projects at the identified roadways.	

TABLE 5-1
OAKDALE 2030 GENERAL PLAN AND CAP MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
This Measure shall be incorporated into an implementation program under General Plan Policy NR-1.8, Transportation Noise Mitigation. The implementation of noise reducing pavement should be considered within the established road maintenance schedule.			
Energy and Global Climate Change			
Measure 4.13.2: Implement the City of Oakdale Climate Action Plan. As previously discussed, the Oakdale CAP contains many GHG reduction goals and strategies related to 5 broad topics: energy efficiency, transportation and land use, solid waste reduction, and water and wastewater use. For example, energy reduction strategies include promoting energy efficiency rebates, programs, and benchmarking for residential, commercial, and industrial users. All industrial users over 3,000 sf will be required to offset 20% of their building energy consumption with on-site renewable energy or 40% of their energy with off-site renewable energy by 2019. CAP strategies encourage higher-density development and commute trip reduction programs, as well as building out the proposed bicycle network and 75% solid waste diversion by 2020. With implementation of the above City policies and the City of Oakdale CAP reduction strategies, buildout of the 2030 General Plan Update would achieve more than a 29% reduction compared to BAU and would thus not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, nor would the General Plan conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.	Planning Division	Implement following approval of CAP. Monitor progress annually as part of General Plan progress report.	

CHAPTER 6
Crane Crossing Specific Plan Mitigation Monitoring and Reporting Program

6.1 Introduction

The purpose of this Mitigation Monitoring and Reporting Program (MMRP) is to describe the City of Oakdale's roles and responsibilities in the mitigation monitoring process for the proposed project, pursuant to CEQA Guidelines Section 15097 and Public Resources Code Section 21081.6.

A reporting and monitoring program ensures that measures adopted to reduce or avoid significant environmental impacts are implemented. It is a working guide to facilitate not only the implementation of mitigation measures, but also the monitoring, compliance, and reporting activities of the City of Oakdale. The MMRP includes a description of the requirements of CEQA and a compliance checklist. The intent of the MMRP is to prescribe and enforce a means for properly and successfully implementing the mitigation measures as identified within the EIR for this project.

6.2 Compliance Checklist

This MMRP is intended to be used by City staff and mitigation monitoring personnel to ensure compliance with the approved mitigation measures during all phases of project implementation. The mitigation measures identified in this MMRP were identified in the EIR prepared for the project. Mitigation is defined by CEQA Guidelines Section 15370 as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action.
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment.
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project.
- Compensates for the impact by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures. Monitoring and documenting the implementation of mitigation measures will be coordinated by the City of Oakdale. **Table 6-1** identifies the mitigation measure, the

monitoring action for the mitigation measure, the responsible party for the monitoring action, and timing of the monitoring action. The City of Oakdale will be responsible for fully understanding and effectively implementing the mitigation measures contained within the MMRP.

6.3 Mitigation Monitoring Program

Table 6-1 indicates the mitigation measure number along with the mitigation measure text consistent with the impacts discussion presented in the EIR. Additionally, it identifies the agency or individual responsible for the implementation and monitoring of the measure, the timing for implementation of the mitigation or monitoring actions, and an area for the assigned inspector to verify compliance. The following mitigation measures apply to development within the Crane Crossing Specific Plan area. This MMRP contains mitigation measures under the heading of the 2030 General Plan that apply citywide, which includes the CCSP area. Additional mitigation measures specific to development associated with the CCSP also apply, and are under the heading of CCSP.

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Land Use and Agricultural Resources			
CCSP			
Measure 4.1.3a: Agricultural mitigation within the CCSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.	Planning Division	Easement required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Cultural Resources			
CCSP			
Measure 4.2.1a: Survey Unexamined Portions of the Specific Plan Area for Historic Resources before Project Construction. The City shall ensure that the project applicant hire a professional meeting the Secretary of the Interior's Professional Qualification Standards for architectural historian to survey unexamined portions of the Specific Plan Area (including those areas within Area 1 with potential identified historic resources) for which access was restricted during preparation of the DEIR. If historic resources are identified as a result of the survey, the City shall ensure that the project applicant retain a qualified architectural historian to evaluate the significance of the resource and recommend appropriate mitigation measures for significant resources (see Mitigation Measure 4.2.1b).	Planning Division	Survey required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Measure 4.2.1b: Implement a Historic Properties Management Plan. At the completion of Mitigation Measure 4.2.1a and if historic properties (i.e., archaeological and/or architectural) are identified within the Specific Plan Area, the City shall ensure that the project applicant retain a qualified architectural historian to implement a Historic Properties Management Plan (HPMP) for each identified historic property. The HPMP will be completed and implemented prior to issuance of any permits or commencement of any ground disturbing activity within a proposed development area. The plan will include steps to identify, record, and evaluate potential historic resources for eligibility for listing in the California Register. Such steps will include archival review at both the Central California Information Center and any appropriate local repository, photo documentation of the building, recordation of the building on DPR 523 forms, and application of the California Register criteria. Site evaluation to assess the eligibility of the resource shall be conducted by a professional meeting the Secretary of the Interior's Professional Qualification Standards for architectural historian. The evaluation shall include sufficient archival research to fully address the history of the resource. The HPMP will also provide potential mitigation to lessen impacts to historic resources, such as avoidance and preservation, HABS-quality photo-documentation and recordation, building relocation or reuse, materials reuse, and/or public outreach. If the site evaluation results in an assessment that the building is not eligible, no further work or protective measures will be necessary.	Planning Division	Prior to issuance of first building permit, grading permit, or encroachment permit.	
Measure 4.2.2a: Discovery of Cultural Resources during Ground-Disturbing Activities. The City shall ensure that the project applicant (or construction contractor) cease work if prehistoric, historic or paleontological subsurface cultural resources are discovered during ground-disturbing activities. If	Planning Division	Ongoing during project construction.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
cultural resources are discovered during ground-disturbing activities, all activity in the vicinity shall cease until the discovery is evaluated by an archaeologist or paleontologist working under the direction of a Principal Investigator who meets the requirements of the Secretary of the Interior's Qualification Standards. If the archaeologist/paleontologist determines that the resources may be significant, no further work in the vicinity of the resources shall take place until appropriate treatment is determined and implemented. The need for archaeological and Native American monitoring during the remainder of the project will be re-evaluated by the archaeologist as part of the treatment determination, if deemed appropriate. The archaeologist shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. In considering any suggested mitigation proposed by the archaeologist in order to mitigate impacts to cultural resources, the project proponent will determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) will be instituted.			
Measure 4.2.2b: Halt Work if Human Skeletal Remains are Identified During Construction. If human skeletal remains are uncovered during project construction, the City shall ensure that the project applicant (or construction contractor) immediately halt work and contact the Stanislaus County Coroner to evaluate the remains; the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines must be followed. If the County Coroner determines that the remains are Native American, the project proponent will contact the NAHC, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (Public Resources Code 5097.98), with the most likely descendents regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.	Planning Division	Ongoing during project construction.	
Transportation and Circulation			
CCSP			
Measure 4.5.1a: Modifying the traffic signal timings at F Street (SR 108) / Crane Road would decrease delay from 41 seconds to 34 seconds in the PM peak hour. This mitigation would improve operations from unacceptable LOS D to acceptable LOS C.	Public Works Department	Prior to acceptance of public improvements by the City within the CCSP.	
Measure 4.5.1b: Modifying the traffic signal timings at F Street (SR 108) / Yosemite Avenue (SR 120) would decrease delay from 57 seconds to 50 seconds in the PM peak hour. This mitigation would improve operations from unacceptable LOS E to acceptable LOS D.	Public Works Department	Prior to acceptance of public improvements by the City within the CCSP.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
2030 General Plan and CCSP			
Measure 4.5.1c: This impact could be mitigated by widening SR 108 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next regional transportation plan (RTP).	
Measure 4.5.1d: This impact could be mitigated by widening F Street (SR 108) to create an additional through lane in each direction. Implementation of this mitigation measure would reduce the impact to less than significant. This improvement is partially funded by the City's Capital Improvement Program (CIP). Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	
Measure 4.5.1e: This impact could be mitigated by widening SR 108/SR 120 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1f: This impact could be mitigated by widening Valley Home Road (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	
Measure 4.5.1g: This impact could be mitigated by widening Yosemite Avenue (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1h: This impact could be mitigated by widening Yosemite Avenue/Albers Road to four lanes. This improvement is partially funded by the City's CIP. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F.	Public Works Department	CIP timing to be coordinated with buildout of CCSP.	
Measure 4.5.1i: This impact could be mitigated by widening Patterson Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including improvements as part of the next RTP.	
2030 General Plan			
Measure 4.5.4c: Converting the intersection of Maag Avenue / J Street to all-way stop control would reduce delay at this intersection to LOS C levels during the AM peak hours.	Public Works Department	Prior to acceptance of public improvements by the City within the SPSP.	
Measure 4.5.4d: This impact could be mitigated by widening this segment of F Street (SR 108/SR 120) to create an additional travel lane in each direction. This improvement is considered feasible is a planned Caltrans improvement. Funding is available from the City's CIP and Caltrans' Regional Surface Transportation Program (RSTP).	Public Works Department	City shall monitor Caltrans project planning.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.5.4e: This impact could be mitigated by widening Warnerville Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Measure 4.5.4f: This impact could be mitigated by improving South Stearns Road from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS F to LOS D.	Public Works Department	City shall consider proposed improvements as part of the next Capital Improvement Program (CIP).	
Measure 4.5.4h: This impact could be mitigated by widening Sierra Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7a: This impact could be mitigated by adding a southbound right-turn lane and modifying signal operations at the intersection to include right-turn overlap phasing on the northbound and southbound approaches. This mitigation would improve operations in the PM peak hour from LOS F to LOS D. Funding for this improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7b: This impact could be mitigated by modifying the traffic signal timings at F Street (SR 108) / Willowood Drive. This mitigation would improve operations from unacceptable LOS D to acceptable LOS C. Funding for this relatively low-cost improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7c: This impact could be mitigated by widening F Street (SR 108) to create an additional lane in each direction at the intersection. This improvement is partially funded by the City's CIP; if full funding could be identified, implementation of this mitigation would reduce the impact to less than significant. However, this is a Caltrans facility and Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard at this intersection from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	
Mitigation Measure 4.5.7d: This impact could be mitigated by modifying the intersection at F Street (SR 108/SR 120) / South Stearns Road to install a traffic signal and add the following lanes: ▪ Eastbound approach – left-turn lane, through lane, and right-turn lane ▪ Westbound approach – through lane ▪ Northbound approach – left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS D or better during both peak hours. These improvements could be primarily funded by developer impact fees from the Sierra Pointe Specific Plan. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7e: This impact could be mitigated by installing a traffic signal at SR 108/SR 120 / Wamble Road and adding left-turn lanes on the eastbound and westbound approaches. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Mitigation Measure 4.5.7f: This impact could be mitigated by modifying the traffic signal timings. Implementation of this mitigation measure would reduce delay at this intersection to LOS C levels during the PM peak hour.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7g: The addition of the following lanes at Yosemite Avenue / J Street would reduce delay at this intersection to LOS C during both the AM and PM peak hours: ▪ Westbound approach – left-turn lane ▪ Northbound approach – through lane and right-turn lane ▪ Southbound approach – through lane The width of the roadway on the northbound approach is sufficient to accommodate the right-turn lane. However, the other improvements are considered infeasible due to physical constraints. Adopting General Plan Policy M-2.7 would reduce the LOS standard at this intersection from LOS C to LOS F.	Public Works Department	Right turn lane shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7h: The addition of a southbound right-turn lane at Yosemite Avenue / Greger Street/Wakefield Drive would reduce delay at this intersection to LOS C levels during the PM peak hour. This improvement is considered feasible. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to the currently adopted threshold (the 2015 General Plan) unless the physical improvement described above is constructed.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7i: This impact could be mitigated by modifying the intersection at Greger Street / Kaufman Road to install a traffic signal. This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7j: This impact could be mitigated by modifying the intersection at Fifth Avenue / J Street to install a traffic signal and changing the configuration to include a left-turn lane and a shared through/right-turn lane on each approach. This mitigation is considered feasible and would likely only require minor increases in right-of-way and/or parking restrictions. This would improve operations from unacceptable LOS F to acceptable LOS D during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7k: This impact could be mitigated by converting the Maag Avenue / Sierra Road intersection to all-way stop control. This mitigation is considered feasible. This would improve operations from unacceptable LOS F to acceptable LOS B during the PM peak hour.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5-7l: This impact could be mitigated by modifying the intersection at South Stearns Road / Sierra Road to install a traffic signal and the following lanes: ▪ Eastbound approach – Left-turn lane and right-turn lane ▪ Westbound approach- Left-turn lane ▪ Southbound approach – Left-turn lane and right-turn lane	Public Works Department	Improvements shall be considered as part of the next CIP.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ Northbound approach- Left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. These improvements could be primarily funded by developer impact fees. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.			
Mitigation Measure 4.5.7m: This impact could be mitigated by widening Crane Road to four lanes. A portion of this widening is already in place. This improvement is partially funded by the City's CIP.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7n: This impact could be mitigated by improving Maag Avenue from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS E to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7o: This impact could be mitigated by widening South Stearns Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7p: This impact could be mitigated by widening Wamble Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7q: This impact could be mitigated by improving J Street from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS D to LOS C.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7r: This impact could be mitigated by widening Greger Street to a two-lane arterial. Implementation of this mitigation measure would improve operations from LOS F to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7s: This impact could be mitigated by improving Sierra Road to a two-lane arterial. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS C to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Air Quality			
CCSP			
Measure 4.6.1a: Dust Control Measures. The City shall ensure that the project applicant(s) for individual projects to be developed under the Specific Plans comply with Regulation VIII Rule 8011 and implement the following dust control measures during construction: ▪ Submit a Dust Control Plan subject to review and approval of the SJVAPCD at least 30 days prior to the start of any construction activity on a site that includes 40 acres or more of disturbed surface area. Specific control measures for construction, excavation, extraction, and other earthmoving activities required by the SJVAPCD include: ▪ All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover in order to comply with Regulation VIII's 20 percent opacity limitation. ▪ All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. ▪ All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water (at least two times per day) or by presoaking. ▪ When materials are transported offsite, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. ▪ All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. However, the use of blower devices is expressly forbidden, and the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. ▪ Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant. ▪ Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday. ▪ Any site with 150 or more vehicle trips per day shall prevent carryout and trackout. Enhanced and additional control measures for construction emissions of PM10 shall be implemented where feasible. These measures include: ▪ Limit traffic speeds on unpaved roads to 15 mph. ▪ Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent. ▪ Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site. ▪ Install wind breaks at windward side(s) of construction areas. ▪ Suspend excavation and grading activity when winds exceed 20 mph. ▪ Limit area subject to excavation, grading, and other construction activity at any one time.			
Measure 4.6.1b: Indirect Source Review. The City shall require applicant(s) for individual projects to be developed under the Specific Plans that are subject to Rule 9510 (Indirect Source Review) to comply with its requirements, including reductions of 20% of the NOx construction emissions and 45% of the PM10 construction exhaust emissions. If these emission reductions are not met, then the applicant(s) shall pay the required mitigation fees to the SJVAPCD.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.6.2a: Transit, Area, and Energy Source Reductions. The City shall require individual project applicant(s), where applicable, to reduce the operational impacts of the Specific Plans by implementing feasible mitigation measures from the following list**:** 1. Transit service infrastructure shall be approved by the City prior to development of each development phase of the Specific Plan: Rideshare Measures: Implement carpool/vanpool program (e.g., carpool, ride matching for employees, assistance with vanpool formation, provision of vanpool vehicles, etc.). Transit Measures: Construct transit facilities such as bus turnouts/bus bulbs, benches, transit shelters, and, route signs and displays at appropriate sites to be developed under CCSP. Project applicant(s) shall contribute to regional transit systems (e.g., right-of-way, capital improvements, and park-and-ride lots), where applicable. Bicycle and Pedestrian Measures: Provide direct, safe, attractive pedestrian and bicycle access to transit stops and adjacent development, including: ▪ Provide bicycle lanes and/or paths, connected to community-wide network. ▪ Provide street lighting. ▪ Improve or construct onsite and offsite pedestrian facilities (e.g., overpasses, wide sidewalks, and building access for pedestrians). ▪ Provide pedestrian safety designs/infrastructure at crossings. 2. Prior to the implementation of individual projects to be developed under the Specific Plan, the applicant(s) will present for City approval an area source and energy-conservation plan that includes consideration of each of the following potential measures. The City, in consultation with the SJVAPCD, will require implementation of clearly feasible measures from this list. ▪ Increased energy efficiency (meet or exceed California Title 24 Requirements); ▪ Increased wall and ceiling insulation (meet or exceed California Title 24 Requirements); ▪ Energy efficient windows (double pane and/or Low-EE); ▪ High-albedo (reflecting) roofing material, or similar; ▪ Cool paving; ▪ Radiant heat barrier; ▪ Energy efficient lighting, appliances, and heating and cooling systems; ▪ Solar water-heating systems; ▪ Photovoltaic cells; ▪ Programmable thermostats for all heating and cooling systems; ▪ Awnings or other shading mechanism for windows; ▪ Porch, patio, and walkway overhangs; ▪ Ceiling fans and whole house fans;	Planning Division/SJVAPCD	Prior to approval of infrastructure improvement plans, tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ Orient buildings to maximize passive solar cooling and heating when practicable; ▪ Use passive solar cooling and heating designs; ▪ Use daylighting (natural lighting) systems such as skylights, light shelves, interior transom windows, etc.; ▪ Use low-VOC architectural coatings; ▪ Electrical outlets around the exterior of the units, to encourage use of electric landscape maintenance equipment; ▪ Low or non-polluting landscape maintenance equipment (e.g., electric lawn movers, reel mowers, leaf vacuums, electric trimmers, and edgers, etc.);			
Measure 4.6.2b: Indirect Source Review. The City shall require implementation plans prepared by the applicant(s) of individual projects to be developed under the Specific Plans shall comply with the SJVAPCD Rule 9510 (Indirect Source Review), if applicable. Compliance with Rule 9510 would require reductions of 33.3% of the NOx operational emissions and 50% of the PM10 operational emissions. If these emission reductions are not met, then the applicant(s) shall pay the required mitigation fees by the SJVAPCD.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Measure 4.6.4: Reduce Exposure to TACs. The City shall require, in consultation with the SJVAPCD, the applicant(s) for individual projects to be developed under the Specific Plan that could expose existing or proposed sensitive receptors to TACs to develop a plan to reduce the exposure of sensitive receptors to TACs from project construction and operation. The plan shall be submitted to the City for review and approval before the approval of any grading plans. In regards to project construction, the plan may include such measures as scheduling activities when the residences are least likely to be occupied, requiring equipment to be shutdown when not in use, prohibiting heavy trucks from idling, using new diesel engines that are designed to minimize DPM emissions usually through the use of catalyzed particulate filters in the exhaust, or retrofitting older engines with catalyzed particulate filters which would reduce up to 85% of DPM emissions. With respect to operational activities, the following measures shall be applied unless site specific health risk analysis is conducted: ▪ Proposed commercial land uses that have the potential to emit TACs (such as loading docks for diesel delivery trucks) shall be located as far away as possible from existing and proposed sensitive receptors. ▪ When determining the specific type of facility that would occupy the proposed commercial land use space, the applicant shall take into consideration the facility's potential to produce TACs. ▪ Large gasoline stations (defined as a facility with a throughput of 3.6 million gallons per year or greater) shall not be permitted within 300 feet of sensitive receptors. Require a 50 foot separation between gasoline stations with a throughput less than 3.6 million gallons per year. These distances shall also be applied to new sensitive land uses. ▪ Dry-cleaning operation using perchloroethylene with two or more machines will not be permitted within 500 feet of a sensitive land uses. For operations with one machine the separation shall be a	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
minimum of 300 feet. For operations with three or more machines, consult the local air district. New sensitive land uses will not be sited in the same building with dry-cleaning operations that use perchloroethylene, and shall comply with the above buffer distances overall.			
Measure 4.6.5: Reduce Odors. The City shall require individual project applicant(s) to implement the following odor control measures during construction or operation: ▪ Locate odor sensitive land uses as far as possible from odor generating land uses. ▪ Consider the odor-producing potential of land uses when the exact type of facility that would occupy areas zoned for commercial or mixed-use land uses is determined. Facilities that have the potential to emit objectionable odors would be located with appropriate buffers from existing and proposed sensitive receptors. ▪ Identify odor control devices within building permit applications to mitigate the exposure of receptors to objectionable odors if a potential odor-producing source is to occupy the project area. The identified odor control devices would be installed before the issuance of certificates of occupancy for the potentially odor-producing use.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Noise			
2030 General Plan			
Measure 4.7.3a: The City shall require the use of noise-reducing pavement to the extent feasible on noise-impacted street segments, including but not limited to: ▪ Crane Road south of F Street ▪ Pontiac Street from Crane Road to Oak Avenue ▪ Greger Street from Crane Road to Yosemite Avenue ▪ Sierra Road from Yosemite Avenue to Stearns Road ▪ Maag Avenue south of F Street ▪ River Road west of Yosemite Avenue ▪ Wamble Road south of SR120/SR 108 ▪ Warnerville Road east of Smith Road ▪ G Street west of Yosemite Avenue ▪ I Street west of Yosemite Avenue This Measure shall be incorporated into an implementation program under General Plan Policy NR-1.8, Transportation Noise Mitigation. The implementation of noise reducing pavement should be considered within the established road maintenance schedule.	Planning Division	Incorporation of feasible noise-reducing pavement specifications shall be considered for future resurfacing/reconstruction projects at the identified roadways.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
CCSP			
Measure 4.7.3b: The City shall require the use of noise-reducing pavement to the extent feasible on Crane Road within the Crane Crossing Specific Plan area at such time the roadway is resurfaced or reconstructed.	Planning Division	Incorporation of feasible noise-reducing pavement specifications shall be considered prior to approval of public improvement plans for CCSP.	
Hazardous Materials			
CCSP			
Measure 4.8.1a: Measures to Prevent Possible Exposure to Previously Undiscovered On-site Hazardous Materials. The City shall require that, if during site preparation and construction activities, previously undiscovered or unknown hazardous materials are observed or suspected through either obvious or implied measures (e.g., stained or odorous soil), construction contractor(s) would immediately cease all activities in the area of the find. The contractor(s) would immediately contact the Stanislaus County Department of Environmental Resources (County DER) staff for direction on further protocols regarding management of suspected soil or groundwater contamination and interim requirements for remediation, if any. In addition, the project applicant would contract with a qualified consultant registered in the California Department of Toxic Substances Control's (DTSC's) Registered Environmental Assessor Program to assess the situation. The Registered Environmental Assessor would collect soil and/or water samples for laboratory analysis in accordance with County DER oversight to determine whether past activities have adversely affected the site. An environmental professional would analyze the samples for contaminants determined to be a potential health concern. Any contaminated areas would be remediated in accordance with recommendations that County DER, the Central Valley Regional Water Quality Control Board, DTSC, or other appropriate federal, state, or local regulatory agencies makes. Site preparation and construction activities would not proceed until remediation is completed to the satisfaction of County DER.	Planning Division/County Department of Environmental Resources	Ongoing during construction	
Measure 4.8.1b: Abandon On-Site Wells or Septic Systems. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed well drilling contractor to abandon any on-site water wells or septic systems in accordance with County DER requirements.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	
Measure 4.8.1c: Remove and Dispose of Stained Soils. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed contractor to remove and properly dispose of all stained soil in accordance with the disposal facilities requirements as well as federal, state, and local regulations.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	
Measure 4.8.1d: Remove On-Site Debris. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed contractor to remove and properly recycle or dispose debris from the project site before the start of ground-disturbing activities. If soil staining is observed after the removal of debris, soils would be removed and disposed of in accordance with federal, state, and local regulations. If structures are to be demolished on a specific site, a qualified contractor should survey and properly remove/dispose of any asbestos containing building materials or lead-based paints that are identified.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.8.1e: Evaluate Pole-Mounted Transformers for the Presence of Polychlorinated Biphenyls (PCBs). Before construction begins, the project applicant would contact Pacific Gas and Electric (PG&E) to assess the contents of the existing pole-mounted transformers located on the project site. PG&E would conduct an assessment and provide a letter stating whether existing electrical transformers on the site contain PCBs and whether any records of spills exist from such equipment. If PG&E identifies PCB-containing equipment, the maintenance or disposal of the transformer would be subject to the regulations of the Toxic Substances Control Act under the authority of County DER.	Planning Division/County Department of Environmental Resources	Prior to construction. Include as a condition of tentative map, public improvement plan, or grading plan.	
Geology, Soils, Seismicity, and Mineral Resources			
CCSP			
Measure 4.10.3a: The City shall require project applicants to prepare site specific studies to evaluate subsurface conditions relative to the proposed uses. Future site specific studies should include laboratory testing to further define the impact potential of the on-site soils. If significant concentrations of on-site soils with moderate to high liquefaction potential are present, volume changes with increasing or decreasing soil moisture content and should be taken into consideration during design and construction of foundations and slab-on-grade floors. Studies shall be required prior to the approval of a tentative subdivision map. Where no map is required, the City may require such studies with the site plan.	Building Safety Division	Prior to approval of tentative map, or if no map is required, prior to approval of building permit.	
Biological Resources			
CCSP			
Measure 4.11.1a: Conduct Pre-Construction Surveys for Bats and Avoid Maternity Roosting Sites. The City shall require the project applicant to conduct pre-construction surveys by a qualified biologist. If tree removal or ground disturbing activities commence on the project site during the breeding season of native bat species (April 1 to August 31), then a field survey shall be conducted by a qualified bat biologist to determine whether active roosts are present on site or within 50 feet of the project boundaries. Field surveys shall be conducted early in the breeding season before any construction activities begin, when bats are establishing maternity roosts but before pregnant females give birth (April through early May). If no roosting bats are found, then no further mitigation is required. If roosting bats are found, then disturbance of the maternity roosts shall be avoided by halting construction until the end of the breeding season or a qualified bat biologist removes and relocates the roosting bats in consultation with CDFG.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition) between April 1 and August 31.	
Measure 4.11.1b: Conduct Pre-Construction Surveys for California Burrowing Owls and Avoid Loss or Disturbance of Active Nests. The City shall require the project applicant to conduct pre-construction surveys for burrowing owls by a qualified biologist [as approved by the California Department of Fish and Game (CDFG)] within 30-days prior to the start of work activities where land construction is planned in known or suitable habitat. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the CDFG/California Burrowing Owl Consortium survey protocols. If burrowing owls are discovered in the proposed project site vicinity during construction, the onsite	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition).	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
biologist shall be notified immediately. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFG verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. If this criteria is not met, occupied burrows during the nesting season will be avoided by establishment of a no-work buffer of 250-foot around the occupied/active burrow. Where maintenance of a 250-foot no-work buffer zone is not practical, the project sponsor shall consult with the Department of Fish and Game to determine appropriate avoidance measures. Burrows occupied during the breeding season (February 1 to August 31) will be closely monitored by the biologist until the young fledge/leave the nest. The onsite biologist shall have the authority to stop work if it is determined that construction related activities are disturbing the owls. If criterion 1 or 2 above are met and as approved by CDFG, the biologist shall undertake passive relocation techniques by installing one-way doors in active and suitable burrows allowing owls to escape but not re-enter. Owls should be excluded from the immediate impact zone and within a 160-foot buffer zone by having one-way doors placed over the entrance to prevent owls from inhabiting those burrows. After nesting season ends (August 31) and the burrow is deemed unoccupied by the biologist, passive relocation techniques shall take place. Construction activities may occur once a qualified biologist has deemed the burrows are unoccupied.			
Measure 4.11.1c: Conduct Pre-Construction Surveys for Western Pond Turtle and Avoid Loss or Disturbance of Habitat. The City shall require the project applicant to conduct pre-construction surveys by a qualified biologist. These surveys would assess the site to determine if appropriate habitat for western pond turtle exists within or adjacent to the proposed project site. Results of the survey will be provided to the City and the CDFG to ensure that there are proper avoidance and relocation measures in place before construction starts. To minimize impacts to western pond turtle during construction activities were turtle habitat exists, the City will require the project applicant retain a qualified biologist to conduct surveys for western pond turtles within 24 hours of the start of construction. If a turtle is found in the construction area, the biologist shall relocate the turtle to appropriate habitat outside of the impact area. A qualified biological monitor shall be present when construction work occurs adjacent to turtle habitat and/or when western pond turtles have been detected during previous surveys.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition).	
Measure 4.11.1d: Conduct Pre-Construction Surveys for Nesting Raptors and Other Birds. For any construction activities that will occur between March 1 and August 31 of any given year, the City shall require the applicant to conduct preconstruction surveys for suitable nesting habitat within 0.5 mile of the construction area. Surveys shall be conducted by a qualified biologist. In addition, all trees slated for removal during the nesting season shall be surveyed by a qualified biologist no more than 48-hours before removal to ensure that no nesting birds are occupying the tree. If active nests are found during the survey, the applicant shall implement appropriate mitigation measures to ensure that the species will not be adversely affected, which will include establishing a no-work buffer zone as, approved by CDFG, around the active nest. The no-work buffer may vary	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition) between March 1 and August 31.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
depending on species and site specific conditions as approved by CDFG. Appropriate mitigation measures include delaying construction activities until a qualified biologist determines that juveniles have fledged the nest(s), or establishing a "no construction" zone buffer around the nest. The results of the survey shall be documented in a letter report that is distributed to the California Department of Fish and Game. These measures will ensure compliance with the Migratory Bird Treaty Act and California Department of Fish and Game Code 3503.5.			
Measure 4.11.1e: Avoid or Identify and Compensate for Loss of Vernal Pool Habitats and Species. If during pre-construction surveys vernal pool habitat is found on the subject site, then the City shall ensure that the project applicant retain a qualified biologist to evaluate the site for the suitability of special-status vernal pool invertebrates. Based on the suitability evaluation, the project applicant shall either (a) have protocol level surveys preformed to establish presence or absence or (b) assume presence and mitigate. If protocol level surveys determine that special-status vernal pool invertebrates are present or the applicant assumes presence, then the applicant shall provide on-site habitat preservation in perpetuity **and** purchase habitat creation credits at an USFWS approved mitigation bank **and/or** restore/enhance habitat as approved by USFWS to fully compensate for direct and indirect effects to habitat for federally listed vernal pool species at a 2:1 preservation ratio and 1:1 creation ratio for direct effects to vernal pool habitat and a 2:1 preservation ratio for indirect effects to vernal pool habitat. Habitat compensation must occur prior to or concurrent with the development of a project and must be approved by the USACE and USFWS prior to the initiation of construction activities.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1f: Avoid or Identify and Compensate for Loss of Valley Elderberry Longhorn Beetle. If during pre-construction surveys elderberry shrubs are found on the subject site, then the City shall ensure that the project applicant will: a) Conduct protocol-level elderberry shrub surveys in the proposed project area. Before the beginning of ground disturbance within 100 feet of any area that may support elderberry, a qualified biologist shall conduct an elderberry shrub survey consistent with USFWS protocols for conservation of valley elderberry longhorn beetle (USFWS, 1999). All elderberry shrubs with potential to be affected by project activities shall be mapped and the number of stems greater than 1 inch in diameter on each shrub that may require removal shall be counted. Elderberry plants with no stems measuring 1 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. b) Protect elderberry shrubs from disturbance. The applicant, through coordination with the biologist, shall ensure to the extent feasible and practicable that the footprint of project features, staging areas, and access routes are designed to ensure that no project activities would affect an elderberry with stems measuring 1 inch in diameter at ground level. Buffers of at least 100 feet shall be established around all elderberry shrubs with stems measuring 1 inch in diameter at ground level. The buffer shall be clearly identified in the field by flagging or exclusion fencing. All project activity shall be prohibited within the buffer areas. c) If effects on shrubs cannot be avoided, then develop and implement a mitigation plan approved by the USFWS. If maintaining 100-foot protection buffers is not feasible, consultation with USFWS will be required and an incidental take permit may be required. During this consultation, an appropriate and feasible mitigation plan shall be developed and provided to USFWS for approval (USFWS, 1999).	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.11.1g: Avoid or Identify and Compensate for Loss of Annual Grasslands Habitat. The City shall ensure that the project applicant avoid or minimize the loss of annual grassland habitat, including Swainson's hawk (foraging habitat). To compensate for the loss of Swainson's hawk foraging habitat, the California Department of Fish and Game (CDFG) guidance will be evaluated to determine potential foraging habitat mitigation needs at a project site. An appropriate mitigation ratio will be developed in coordination with CDFG and will be dependent upon the development's distance to the nearest known Swainson's hawk nest site. A typical mitigation ratio may consist of a 0.75:1 requirement to reduce potential effects related to foraging habitat loss.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1h: Avoid or Identify and Compensate for the Loss of Special-Status Plants. The City shall ensure that the project applicant avoid or minimize the loss of sensitive or special status plant species. To compensate for the loss of special status plants, the City shall ensure that vegetated portions of the project site including possible wetland habitats conduct surveys by a qualified botanist for special-status plants following established CDFG *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFG, 2009). Additional compensation measures will include the following: ▪ Avoid existing, known populations where possible; ▪ Minimize impacts by restricting removal of plants to a few individuals of a population where possible; ▪ Prepare a Mitigation and Monitoring Plan to relocate plants and/or seed banks or reintroduce new populations in suitable habitat and soil types within the on-site Preserve or at a CDFG or USFWS-approved off-site location; ▪ Restore or enhance suitable habitat within the Plan Area under the Wetland Management Plan. The Wetland Management Plan would include specific goals to improve habitat conditions for these species within the Preserve, and would include a long-term (at least 5 years) monitoring component to ensure the success of restoration and enhancement activities.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1i: Conduct Worker Awareness Training. When special-status species or sensitive natural communities are found within the boundaries of proposed projects, then the City shall ensure that the project applicant (or construction contractor) implement Worker Environmental Awareness Program (WEAP) training for construction crews and the construction foreman prior to the commencement of any construction activities. The WEAP training would be conducted by a qualified wildlife biologist. The training would include a brief review of the special status species and other sensitive resources that could occur in the project area (including their life history and habitat requirements and where on the project site they may be found) and their legal status and protection. The program would also cover all relevant mitigation measures, permit conditions and BMP plans, such as the Stormwater Pollution Prevention Plan (SWPPP) and/or erosion control and sediment plan. During WEAP training, construction personnel would be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. A designated environmental inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions and that all persons working on site have attended a WEAP training session. WEAP training sessions would be conducted as needed for new personnel brought onto the job throughout the duration of construction.	Planning Division	Prior to start of construction.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.11.1j: Limit Project Access Routes/Staging Areas. The City shall ensure that the project applicant (or construction contractor) limit the total number of access routes, number and size of staging areas, and the total area of project activity to those areas identified in the approved construction drawings and/or plans or as otherwise approved per permit conditions. Access routes and project boundaries would be clearly marked at all times. Access routes for heavy equipment to and from the project site would be restricted to established roadways to minimize habitat disturbance. The storing of construction equipment, vehicles, and supplies would be restricted to the designated construction staging areas outside of the proposed Preserve, wetland avoidance areas, and riparian buffer areas. All fueling, cleaning and maintenance activities of vehicles and other equipment would be performed only in designated areas and at least 250 feet away from avoided/preserved habitats. As part of WEAP training, all workers would be informed of the importance of preventing spills and appropriate measures to take in the event of a spill. All spills would be cleaned up immediately.	Planning Division	Prior to issuance of grading permits, encroachment permits or approval of public improvement plans.	
Measure 4.11.1k: Protect Preserved and Avoided Habitats During Construction-Related Activities. The City shall ensure that the project applicant (or construction contractor) avoid and preserve sensitive habitats from construction activities. Habitat protection measures would include the following: ▪ A USFWS-approved biologist (monitor) would inspect all construction-related activities at the project site to ensure that no unauthorized take of listed species or destruction of their habitat occurs. The biologist would have the authority to stop any activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also would be required to report immediately any unauthorized impacts to the USFWS and the CDFG. ▪ Adequate fencing would be placed and maintained around all avoided (preserved) vernal pool habitat to prevent direct impacts from construction. The location of fencing shall be marked in the field with stakes and flagging and shown on the construction drawings.	Planning Division	Prior to start of construction.	
Measure 4.11-2a: Implement Water Quality Best Management Practices to Minimize Impacts to Sensitive Natural Communities. The City shall ensure that the project applicant (or construction contractor) implement all applicable water quality best management practices (BMPs) during construction-related activities. Use of BMPs for stormwater control is expected to reduce the potential for preserved and avoided sensitive natural communities (including wetlands, vernal pools, and other sensitive aquatic habitats) to be indirectly affected by sediment-laden discharges from construction sites. The performance and effectiveness of these BMPs would be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where the verification of containment reduction or elimination is required to determine the adequacy of the measures. BMPs to be implemented would include, but are not limited to, the following: ▪ All disturbed surfaces or stockpile areas would be protected with erosion control measures in place during the period of October 1 through April 30. ▪ Erosion control or BMP measures will be implemented for ground-disturbance areas located uphill and within 500 feet from a water body. BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) would be employed per the product specifications for disturbed areas, stockpiled soil, and along culverts and drainage ditches on	Planning Division	Ongoing during construction. SWPPP may be required prior to start of construction (for projects over one acre).	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
active construction sites and in downstream areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs would be part of the contractor's project specifications. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, trenching, grading, or other surface-disturbing activities outside of the designated construction area. Signs shall be erected along the protective fencing at a maximum spacing of one sign per 50 feet of fencing. The signs shall state: "This area is environmentally sensitive; no construction or other operations may occur beyond this fencing. Violators may be subject to prosecution, fines, and imprisonment." The signs shall be clearly readable at a distance of 20 ft, and shall be maintained for the duration of construction activities in the area. Performance and adequacy of the measures would be determined visually by site construction management and verified by the City of Oakdale and Central Valley Regional Water Quality Control Board as appropriate. ▪ Dirt and debris would be swept from paved areas in construction zones on a daily basis as necessary to remove excessive accumulations of silt, mud or other debris. Sweeping and dust removal would be implemented by the contractor and oversight of these operations the responsibility of the construction site superintendent. ▪ All exposed/disturbed areas, left barren of vegetation due to project related activities, would be seeded, mulched and fertilized with a blend of native and/or naturalized grass and forb species. Locally native wildflower and/or shrub seeds may be included in the seed mix. Planted areas must achieve an 80% acreage coverage rate to be considered successful. All exposed areas where seeding is considered unsuccessful after 90 days, would received appropriate soil preparation and a second application of seed/mulch/fertilizer. Quarterly monitoring events would be conducted for a period of one year or until the target goal is met. The application, schedule, and maintenance of the vegetative cover would be the responsibility of the contractor and requirements to establish a vegetative cover would be included in the construction contractor's project specifications. ▪ If discharges of sediment or hazardous substances to drainage ways are observed, construction would be halted until the source of contamination is identified and remediated. Visual indications of such contamination include an oily sheen or coating on water, and noticeable turbidity (lack of clarity) in the water.			
Measure 4.11.2b: Protect Sensitive Tree Resources Adjacent to Construction Activities. The City shall ensure that the project applicant (or construction contractor) implement all applicable measures prior to and during construction-related activities to protect sensitive tree resources. Sensitive tree resources adjacent to construction activities may require additional protection. Where feasible, buffer zones should include a minimum one-foot-wide buffer zone outside the dripline for oaks and landmark trees. The locations of these resources should be clearly identified on the construction drawings and marked in the field. Fencing or other barriers would remain in place until all construction and restoration work that involves heavy equipment is complete. Construction vehicles, equipment, or materials should not be parked or stored within the fenced area. No signs, ropes, cables, or other items should be attached to the protected trees. Grading, filling, trenching, paving, irrigation, and landscaping within the driplines of oak trees should be limited. Grading within the driplines of oak trees should not be permitted unless specifically authorized by a Certified Arborist.	Planning Division	Tree survey shall be completed prior to issuance of building or grading permit. Monitor protection measures during construction. Post-construction monitoring annually for three years.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
The City of Oakdale shall ensure that project applicants will comply with the City of Oakdale's Municipal Code, Chapter 32, *Section 32-7 Trimming or removal of trees generally*. Prior to construction, the applicant shall conduct a tree survey for oak trees that may be impacted by the project. The applicant shall coordinate with the City of Oakdale's Building Official to ensure that impacts to oak trees and heritage oak trees are avoided to the extent feasible. In the event that oak trees must be removed, the applicant shall coordinate with the City of Oakdale to determine the number of trees that would be affected. Removed trees will be replaced at a ratio of 2:1. All trees planted shall be purchased from a locally adapted genetic stock obtained within 50 miles and 1,000 feet in elevation of a project site. A Maintenance and Monitoring Plan shall be developed to provide cages or support stakes for each sapling, identify a weed control schedule, and outline a watering regime for the plantings. If the site does not have adequate room for replanting trees, the City may require payment to a tree replacement fund. Annual monitoring of the planted trees for three years shall be conducted following completion of construction to ensure the continued survival of retained native trees and newly planted trees. A Certified Arborist shall be contacted to discuss success criteria and required length of monitoring prior to conducting the first annual survey.			
Measure 4.11.2c: Avoid or Identify and Compensate for Loss of Wetlands and other Waters of the U.S. The City shall ensure that the project applicant of subsequent projects within the Specific Plan area shall reconfigure project designs, to the maximum extent feasible, to avoid waters of the U.S., including wetlands. Projects shall minimize disturbances and construction footprints near such areas to the extent feasible. Where impacts are identified to specific wetlands or other Waters of the U.S., the City shall ensure that the project applicant shall retain a qualified biologist to perform a formal wetland delineation to be submitted to the U.S. Army Corps of Engineers (ACOE) for verification. If it is determined that the project will impact waters of the U.S., The City shall ensure that the project applicant will obtain all required permit approvals from the ACOE, RWQCB, CDFG and any other agencies with permitting responsibilities for construction activities within jurisdictional features. Permit approvals and certifications would likely include the following: ▪ Clean Water Act Section 404. Permit approval from the ACOE shall be obtained for the placement of dredge or fill material in waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. The Section 404 permit application would require a delineation of wetlands and other waters of the U.S., a jurisdictional determination from the ACOE, and preparation of a Pre-Construction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features. State and federal regulations require that the project applicant avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands. Wetlands that cannot be avoided must be compensated to result in "no net loss" of wetlands to ensure that the project would maintain the current functions and values of onsite wetland habitats. ▪ Clean Water Act Section 401 Water Quality Certification/Porter-Cologne Act. Approval of Water Quality Certification (WQC) under the CWA and/or Waste Discharge Requirements (WDRs) under the Porter-Cologne Act shall be obtained from the RWQCB for work within jurisdictional waters.	Planning Division	Demonstrate compliance prior to issuance of building or grading permit.	

TABLE 6-1
CRANE CROSSING SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Application for a WQC requires an application and supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Application for a WDR requires an application and supporting materials, including a characterization of the discharge which includes but is not limited to: design and actual flows; a list of constituents and the discharge concentration of each constituent; a list of other appropriate waste discharge characteristics; a description and schematic drawing of all treatment process; a description of any BMPs used; and a description of disposal methods. Proof of CEQA compliance is also required. ▪ California Fish and Game Code Section 1602. CDFG requires a Streambed Alteration Agreement for activities that result in alteration of the bed or bank of a stream (typically the top of bank or edge of riparian habitat, whichever is greater), or that adversely impact fish or wildlife resources. The notification package must include supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Additionally, the City shall ensure that permanent degradation of aquatic habitats will be compensated for at a 1:1 ratio through the purchase of similar habitat value from a USFWS approved conservation bank. Compensation shall take the form of wetland and/or riverine preservation or creation in accordance with U.S. Army Corps of Engineers and California Department of Fish and Game (CDFG) mitigation requirements, as required under project permits. Preservation and creation may occur onsite through a conservation agreement or offsite through purchasing credits at a U.S. Army Corps of Engineers approved mitigation bank.			
Energy and Global Climate Change			
2030 General Plan and CCSP			
Measure 4.13.2: Implement the City of Oakdale Climate Action Plan. As previously discussed, the Oakdale CAP contains many GHG reduction goals and strategies related to 5 broad topics: energy efficiency, transportation and land use, solid waste reduction, and water and wastewater use. For example, energy reduction strategies include promoting energy efficiency rebates, programs, and benchmarking for residential, commercial, and industrial users. All industrial users over 3,000 sf will be required to offset 20% of their building energy consumption with on-site renewable energy or 40% of their energy with off-site renewable energy by 2019. CAP strategies encourage higher-density development and commute trip reduction programs, as well as building out the proposed bicycle network and 75% solid waste diversion by 2020. With implementation of the above City policies and the City of Oakdale CAP reduction strategies, buildout of the 2030 General Plan Update would achieve more than a 29% reduction compared to BAU and would thus not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, nor would the General Plan conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.	Planning Division	Implement following approval of CAP. Monitor progress annually as part of General Plan progress report.	

CHAPTER 7
Sierra Pointe Specific Plan Mitigation Monitoring and Reporting Program

7.1 Introduction

The purpose of this Mitigation Monitoring and Reporting Program (MMRP) is to describe the City of Oakdale's roles and responsibilities in the mitigation monitoring process for the proposed project, pursuant to CEQA Guidelines Section 15097 and Public Resources Code Section 21081.6.

A reporting and monitoring program ensures that measures adopted to reduce or avoid significant environmental impacts are implemented. It is a working guide to facilitate not only the implementation of mitigation measures, but also the monitoring, compliance, and reporting activities of the City of Oakdale. The MMRP includes a description of the requirements of CEQA and a compliance checklist. The intent of the MMRP is to prescribe and enforce a means for properly and successfully implementing the mitigation measures as identified within the EIR for this project.

7.2 Compliance Checklist

This MMRP is intended to be used by City staff and mitigation monitoring personnel to ensure compliance with the approved mitigation measures during all phases of project implementation. The mitigation measures identified in this MMRP were identified in the EIR prepared for the project. Mitigation is defined by CEQA Guidelines Section 15370 as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action.
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment.
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project.
- Compensates for the impact by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures. Monitoring and documenting the implementation of mitigation measures will be coordinated by the City of Oakdale. **Table 7-1** identifies the mitigation measure, the

monitoring action for the mitigation measure, the responsible party for the monitoring action, and timing of the monitoring action. The City of Oakdale will be responsible for fully understanding and effectively implementing the mitigation measures contained within the MMRP.

7.3 Mitigation Monitoring Program

Table 7-1 indicates the mitigation measure number along with the mitigation measure text consistent with the impacts discussion presented in the EIR. Additionally, it identifies the agency or individual responsible for the implementation and monitoring of the measure, the timing for implementation of the mitigation or monitoring actions, and an area for the assigned inspector to verify compliance. The following mitigation measures apply to development associated with the Sierra Pointe Specific Plan area. This MMRP contains mitigation measures under the heading of the 2030 General Plan that apply citywide, which includes the SPSP area. Additional mitigation measures specific to development associated with the SPSP also apply, and are under the heading of SPSP.

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Land Use and Agricultural Resources			
SPSP			
Measure 4.1.3b: Agricultural mitigation within the SPSP is required to occur at a ratio of at least 1:1 for conversion of Prime Farmlands, Farmland of Statewide Importance, and Unique Farmlands (as designated by the California Department of Conservation Farmland Mapping and Monitoring Program) to residential uses, consistent with Stanislaus LAFCO policy. This can be achieved by acquisition and dedication of agricultural land, development rights and/or conservation easements to permanently protect agricultural land, or payment of in-lieu fees to an established, qualified, mitigation program to fully fund the acquisition and maintenance of such agricultural land, development rights or easements.	Planning Division	Easement required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Cultural Resources			
SPSP			
Measure 4.2.1a: Survey Unexamined Portions of the Specific Plan Area for Historic Resources before Project Construction. The City shall ensure that the project applicant hire a professional meeting the Secretary of the Interior's Professional Qualification Standards for architectural historian to survey unexamined portions of the Specific Plan Area (including those areas within Area 1 with potential identified historic resources) for which access was restricted during preparation of the DEIR. If historic resources are identified as a result of the survey, the City shall ensure that the project applicant retain a qualified architectural historian to evaluate the significance of the resource and recommend appropriate mitigation measures for significant resources (see Mitigation Measure 4.2.1b).	Planning Division	Survey required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Measure 4.2.1b: Implement a Historic Properties Management Plan. At the completion of Mitigation Measure 4.2.1a and if historic properties (i.e., archaeological and/or architectural) are identified within the Specific Plan Area, the City shall ensure that the project applicant retain a qualified architectural historian to implement a Historic Properties Management Plan (HPMP) for each identified historic property. The HPMP will be completed and implemented prior to issuance of any permits or commencement of any ground disturbing activity within a proposed development area. The plan will include steps to identify, record, and evaluate potential historic resources for eligibility for listing in the California Register. Such steps will include archival review at both the Central California Information Center and any appropriate local repository, photo documentation of the building, recordation of the building on DPR 523 forms, and application of the California Register criteria. Site evaluation to assess the eligibility of the resource shall be conducted by a professional meeting the Secretary of the Interior's Professional Qualification Standards for architectural historian. The evaluation shall include sufficient archival research to fully address the history of the resource. The HPMP will also provide potential mitigation to lessen impacts to historic resources, such as avoidance and preservation, HABS-quality photo-documentation and recordation, building relocation or reuse, materials reuse, and/or public outreach. If the site evaluation results in an assessment that the building is not eligible, no further work or protective measures will be necessary.	Planning Division	Prior to issuance of first building permit, grading permit, or encroachment permit.	
Measure 4.2.2a: Discovery of Cultural Resources during Ground-Disturbing Activities. The City shall ensure that the project applicant (or construction contractor) cease work if prehistoric, historic or paleontological subsurface cultural resources are discovered during ground-disturbing activities. If	Planning Division	Ongoing during project construction.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
cultural resources are discovered during ground-disturbing activities, all activity in the vicinity shall cease until the discovery is evaluated by an archaeologist or paleontologist working under the direction of a Principal Investigator who meets the requirements of the Secretary of the Interior's Qualification Standards. If the archaeologist/paleontologist determines that the resources may be significant, no further work in the vicinity of the resources shall take place until appropriate treatment is determined and implemented. The need for archaeological and Native American monitoring during the remainder of the project will be re-evaluated by the archaeologist as part of the treatment determination, if deemed appropriate. The archaeologist shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. In considering any suggested mitigation proposed by the archaeologist in order to mitigate impacts to cultural resources, the project proponent will determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) will be instituted.			
Measure 4.2.2b: Halt Work if Human Skeletal Remains are Identified During Construction. If human skeletal remains are uncovered during project construction, the City shall ensure that the project applicant (or construction contractor) immediately halt work and contact the Stanislaus County Coroner to evaluate the remains; the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines must be followed. If the County Coroner determines that the remains are Native American, the project proponent will contact the NAHC, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). Per Public Resources Code 5097.98, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section (Public Resources Code 5097.98), with the most likely descendents regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.	Planning Division	Ongoing during project construction.	
Transportation and Circulation			
2030 General Plan and SPSP			
Measure 4.5.1c: This impact could be mitigated by widening SR 108 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next regional transportation plan (RTP).	
Measure 4.5.1d: This impact could be mitigated by widening F Street (SR 108) to create an additional through lane in each direction. Implementation of this mitigation measure would reduce the impact to less than significant. This improvement is partially funded by the City's Capital Improvement Program (CIP). Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.5.1e: This impact could be mitigated by widening SR 108/SR 120 to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1f: This impact could be mitigated by widening Valley Home Road (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	
Measure 4.5.1g: This impact could be mitigated by widening Yosemite Avenue (SR 120) to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.1h: This impact could be mitigated by widening Yosemite Avenue/Albers Road to four lanes. This improvement is partially funded by the City's CIP. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F.	Public Works Department	CIP timing to be coordinated with buildout of SPSP.	
Measure 4.5.1i: This impact could be mitigated by widening Patterson Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including improvements as part of the next RTP.	
Measure 4.5.4c: Converting the intersection of Maag Avenue / J Street to all-way stop control would reduce delay at this intersection to LOS C levels during the AM peak hours.	Public Works Department	Prior to acceptance of public improvements by the City within the SPSP.	
Measure 4.5.4d: This impact could be mitigated by widening this segment of F Street (SR 108/SR 120) to create an additional travel lane in each direction. This improvement is considered feasible is a planned Caltrans improvement. Funding is available from the City's CIP and Caltrans' Regional Surface Transportation Program (RSTP).	Public Works Department	City shall monitor Caltrans project planning.	
Measure 4.5.4e: This impact could be mitigated by widening Warnerville Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Measure 4.5.4f: This impact could be mitigated by improving South Stearns Road from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS F to LOS D.	Public Works Department	City shall consider proposed improvements as part of the next Capital Improvement Program (CIP).	
Measure 4.5.4h: This impact could be mitigated by widening Sierra Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
SPSP			
Measure 4.5.4a: Modifying the intersection at F Street (SR 108/SR 120) / Stearns Road to add the following improvements would improve operations from unacceptable LOS F to acceptable LOS C: ▪ Eastbound approach – left-turn lane and right-turn lane ▪ Westbound approach – left-turn lane and shared through/right-turn lane ▪ Northbound approach – left-turn lane These improvements could be primarily funded by developer impact fees from the Sierra Pointe Specific Plan. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Prior to acceptance of public improvements by the City within the SPSP.	
Measure 4.5.4b: The addition of a northbound right-turn lane at Yosemite Avenue / J Street would reduce delay at this intersection to LOS C levels during both the AM and PM peak hours. The width of the roadway on the northbound approach is sufficient to accommodate the right-turn lane; therefore, this mitigation would only require restriping the approach.	Public Works Department	Prior to acceptance of public improvements by the City within the SPSP.	
Measure 4.5.4g: This impact could be mitigated by widening Wamble Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
2030 General Plan			
Mitigation Measure 4.5.7a: This impact could be mitigated by adding a southbound right-turn lane and modifying signal operations at the intersection to include right-turn overlap phasing on the northbound and southbound approaches. This mitigation would improve operations in the PM peak hour from LOS F to LOS D. Funding for this improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7b: This impact could be mitigated by modifying the traffic signal timings at F Street (SR 108) / Willowood Drive. This mitigation would improve operations from unacceptable LOS D to acceptable LOS C. Funding for this relatively low-cost improvement could come from development impact fees.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7c: This impact could be mitigated by widening F Street (SR 108) to create an additional lane in each direction at the intersection. This improvement is partially funded by the City's CIP; if full funding could be identified, implementation of this mitigation would reduce the impact to less than significant. However, this is a Caltrans facility and Caltrans has no plans to widen this segment, but does plan to relinquish F Street to the City after construction of the North County Corridor. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard at this intersection from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to Caltrans' significance criteria.	Public Works Department	CIP timing to be coordinated with Caltrans relinquishment.	
Mitigation Measure 4.5.7d: This impact could be mitigated by modifying the intersection at F Street (SR 108/SR 120) / South Stearns Road to install a traffic signal and add the following lanes: ▪ Eastbound approach – left-turn lane, through lane, and right-turn lane	Public Works Department	City shall consider feasibility of including project as part of the next RTP.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ Westbound approach – through lane ▪ Northbound approach – left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS D or better during both peak hours. These improvements could be primarily funded by developer impact fees from the Sierra Pointe Specific Plan. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.			
Mitigation Measure 4.5.7e: This impact could be mitigated by installing a traffic signal at SR 108/SR 120 / Wamble Road and adding left-turn lanes on the eastbound and westbound approaches. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider feasibility of including project as part of the next RTP.	
Mitigation Measure 4.5.7f: This impact could be mitigated by modifying the traffic signal timings. Implementation of this mitigation measure would reduce delay at this intersection to LOS C levels during the PM peak hour.	Public Works Department	City shall consider proposed improvements as part of the next CIP.	
Mitigation Measure 4.5.7g: The addition of the following lanes at Yosemite Avenue / J Street would reduce delay at this intersection to LOS C during both the AM and PM peak hours: ▪ Westbound approach – left-turn lane ▪ Northbound approach – through lane and right-turn lane ▪ Southbound approach – through lane The width of the roadway on the northbound approach is sufficient to accommodate the right-turn lane. However, the other improvements are considered infeasible due to physical constraints. Adopting General Plan Policy M-2.7 would reduce the LOS standard at this intersection from LOS C to LOS F.	Public Works Department	Right turn lane shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7h: The addition of a southbound right-turn lane at Yosemite Avenue / Greger Street/Wakefield Drive would reduce delay at this intersection to LOS C levels during the PM peak hour. This improvement is considered feasible. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS D to LOS F. While this would eliminate any policy conflicts, the impact to traffic operations would remain significant relative to the currently adopted threshold (the 2015 General Plan) unless the physical improvement described above is constructed.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7i: This impact could be mitigated by modifying the intersection at Greger Street / Kaufman Road to install a traffic signal. This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7j: This impact could be mitigated by modifying the intersection at Fifth Avenue / J Street to install a traffic signal and changing the configuration to include a left-turn lane and a shared through/right-turn lane on each approach. This mitigation is considered feasible and would likely only require minor increases in right-of-way and/or parking restrictions. This would improve operations from unacceptable LOS F to acceptable LOS D during both peak hours. The City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Mitigation Measure 4.5.7k: This impact could be mitigated by converting the Maag Avenue / Sierra Road intersection to all-way stop control. This mitigation is considered feasible. This would improve operations from unacceptable LOS F to acceptable LOS B during the PM peak hour.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5-7l: This impact could be mitigated by modifying the intersection at South Stearns Road / Sierra Road to install a traffic signal and the following lanes: ▪ Eastbound approach – Left-turn lane and right-turn lane ▪ Westbound approach- Left-turn lane ▪ Southbound approach – Left-turn lane and right-turn lane ▪ Northbound approach- Left-turn lane This would improve operations from unacceptable LOS F to acceptable LOS C or better during both peak hours. These improvements could be primarily funded by developer impact fees. Additionally, the City's CIP identifies funding for up to ten signalized intersections whose locations are not identified. Funding for signalizing the intersection may be available from that program.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7m: This impact could be mitigated by widening Crane Road to four lanes. A portion of this widening is already in place. This improvement is partially funded by the City's CIP.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7n: This impact could be mitigated by improving Maag Avenue from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS E to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7o: This impact could be mitigated by widening South Stearns Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7p: This impact could be mitigated by widening Wamble Road to four lanes. Implementation of this mitigation measure would reduce the impact to less than significant.	Public Works Department	City and County shall consider inclusion of this project in the next RTP.	
Mitigation Measure 4.5.7q: This impact could be mitigated by improving J Street from a two-lane collector to a two-lane arterial. This improvement would improve operations on the segment from LOS D to LOS C.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7r: This impact could be mitigated by widening Greger Street to a two-lane arterial. Implementation of this mitigation measure would improve operations from LOS F to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	
Mitigation Measure 4.5.7s: This impact could be mitigated by improving Sierra Road to a two-lane arterial. Adopting the proposed General Plan Policy M-2.7 would reduce the City's LOS standard on this segment of roadway from LOS C to LOS D.	Public Works Department	Improvements shall be considered as part of the next CIP.	

TABLE 7-1
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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Air Quality			
SPSP			
Measure 4.6.1a: Dust Control Measures. The City shall ensure that the project applicant(s) for individual projects to be developed under the Specific Plans comply with Regulation VIII Rule 8011 and implement the following dust control measures during construction: ▪ Submit a Dust Control Plan subject to review and approval of the SJVAPCD at least 30 days prior to the start of any construction activity on a site that includes 40 acres or more of disturbed surface area. Specific control measures for construction, excavation, extraction, and other earthmoving activities required by the SJVAPCD include: ▪ All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover in order to comply with Regulation VIII's 20 percent opacity limitation. ▪ All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant. ▪ All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water (at least two times per day) or by presoaking. ▪ When materials are transported offsite, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. ▪ All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. However, the use of blower devices is expressly forbidden, and the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. ▪ Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant. ▪ Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday. ▪ Any site with 150 or more vehicle trips per day shall prevent carryout and trackout. Enhanced and additional control measures for construction emissions of PM10 shall be implemented where feasible. These measures include: ▪ Limit traffic speeds on unpaved roads to 15 mph. ▪ Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site. ▪ Install wind breaks at windward side(s) of construction areas. ▪ Suspend excavation and grading activity when winds exceed 20 mph. ▪ Limit area subject to excavation, grading, and other construction activity at any one time.			
Measure 4.6.1b: Indirect Source Review. The City shall require applicant(s) for individual projects to be developed under the Specific Plans that are subject to Rule 9510 (Indirect Source Review) to comply with its requirements, including reductions of 20% of the NOx construction emissions and 45% of the PM10 construction exhaust emissions. If these emission reductions are not met, then the applicant(s) shall pay the required mitigation fees to the SJVAPCD.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Measure 4.6.2a: Transit, Area, and Energy Source Reductions. The City shall require individual project applicant(s), where applicable, to reduce the operational impacts of the Specific Plans by implementing feasible mitigation measures from the following list**:** 1. Transit service infrastructure shall be approved by the City prior to development of each development phase of the Specific Plan: Rideshare Measures: Implement carpool/vanpool program (e.g., carpool, ride matching for employees, assistance with vanpool formation, provision of vanpool vehicles, etc.). Transit Measures: Construct transit facilities such as bus turnouts/bus bulbs, benches, transit shelters, and, route signs and displays at appropriate sites to be developed under CCSP. Project applicant(s) shall contribute to regional transit systems (e.g., right-of-way, capital improvements, and park-and-ride lots), where applicable. Bicycle and Pedestrian Measures: Provide direct, safe, attractive pedestrian and bicycle access to transit stops and adjacent development, including: ▪ Provide bicycle lanes and/or paths, connected to community-wide network. ▪ Provide street lighting. ▪ Improve or construct onsite and offsite pedestrian facilities (e.g., overpasses, wide sidewalks, and building access for pedestrians). ▪ Provide pedestrian safety designs/infrastructure at crossings. 2. Prior to the implementation of individual projects to be developed under the Specific Plan, the applicant(s) will present for City approval an area source and energy-conservation plan that includes consideration of each of the following potential measures. The City, in consultation with the SJVAPCD, will require implementation of clearly feasible measures from this list. ▪ Increased energy efficiency (meet or exceed California Title 24 Requirements); ▪ Increased wall and ceiling insulation (meet or exceed California Title 24 Requirements); ▪ Energy efficient windows (double pane and/or Low-EE); ▪ High-albedo (reflecting) roofing material, or similar; ▪ Cool paving;	Planning Division/SJVAPCD	Prior to approval of infrastructure improvement plans, tentative map, or if no map is required, prior to issuance of first building permit.	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ Radiant heat barrier; ▪ Energy efficient lighting, appliances, and heating and cooling systems; ▪ Solar water-heating systems; ▪ Photovoltaic cells; ▪ Programmable thermostats for all heating and cooling systems; ▪ Awnings or other shading mechanism for windows; ▪ Porch, patio, and walkway overhangs; ▪ Ceiling fans and whole house fans; ▪ Orient buildings to maximize passive solar cooling and heating when practicable; ▪ Use passive solar cooling and heating designs; ▪ Use daylighting (natural lighting) systems such as skylights, light shelves, interior transom windows, etc.; ▪ Use low-VOC architectural coatings; ▪ Electrical outlets around the exterior of the units, to encourage use of electric landscape maintenance equipment; ▪ Low or non-polluting landscape maintenance equipment (e.g., electric lawn movers, reel mowers, leaf vacuums, electric trimmers, and edgers, etc.);			
Measure 4.6.2b: Indirect Source Review. The City shall require implementation plans prepared by the applicant(s) of individual projects to be developed under the Specific Plans shall comply with the SJVAPCD Rule 9510 (Indirect Source Review), if applicable. Compliance with Rule 9510 would require reductions of 33.3% of the NOx operational emissions and 50% of the PM10 operational emissions. If these emission reductions are not met, then the applicant(s) shall pay the required mitigation fees by the SJVAPCD.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Measure 4.6.4: Reduce Exposure to TACs. The City shall require, in consultation with the SJVAPCD, the applicant(s) for individual projects to be developed under the Specific Plan that could expose existing or proposed sensitive receptors to TACs to develop a plan to reduce the exposure of sensitive receptors to TACs from project construction and operation. The plan shall be submitted to the City for review and approval before the approval of any grading plans. In regards to project construction, the plan may include such measures as scheduling activities when the residences are least likely to be occupied, requiring equipment to be shutdown when not in use, prohibiting heavy trucks from idling, using new diesel engines that are designed to minimize DPM emissions usually through the use of catalyzed particulate filters in the exhaust, or retrofitting older engines with catalyzed particulate filters which would reduce up to 85% of DPM emissions. With respect to operational activities, the following measures shall be applied unless site specific health risk analysis is conducted: ▪ Proposed commercial land uses that have the potential to emit TACs (such as loading docks for diesel delivery trucks) shall be located as far away as possible from existing and proposed	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	

TABLE 7-1
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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
sensitive receptors. ▪ When determining the specific type of facility that would occupy the proposed commercial land use space, the applicant shall take into consideration the facility's potential to produce TACs. ▪ Large gasoline stations (defined as a facility with a throughput of 3.6 million gallons per year or greater) shall not be permitted within 300 feet of sensitive receptors. Require a 50 foot separation between gasoline stations with a throughput less than 3.6 million gallons per year. These distances shall also be applied to new sensitive land uses. ▪ Dry-cleaning operation using perchloroethylene with two or more machines will not be permitted within 500 feet of a sensitive land uses. For operations with one machine the separation shall be a minimum of 300 feet. For operations with three or more machines, consult the local air district. New sensitive land uses will not be sited in the same building with dry-cleaning operations that use perchloroethylene, and shall comply with the above buffer distances overall.			
Measure 4.6.5: Reduce Odors. The City shall require individual project applicant(s) to implement the following odor control measures during construction or operation: ▪ Locate odor sensitive land uses as far as possible from odor generating land uses. ▪ Consider the odor-producing potential of land uses when the exact type of facility that would occupy areas zoned for commercial or mixed-use land uses is determined. Facilities that have the potential to emit objectionable odors would be located with appropriate buffers from existing and proposed sensitive receptors. ▪ Identify odor control devices within building permit applications to mitigate the exposure of receptors to objectionable odors if a potential odor-producing source is to occupy the project area. The identified odor control devices would be installed before the issuance of certificates of occupancy for the potentially odor-producing use.	Planning Division/SJVAPCD	Review for conformance and/or consultation with SJVAPCD required prior to approval of tentative map, or if no map is required, prior to issuance of first building permit.	
Noise			
2030 General Plan			
Measure 4.7.3a: The City shall require the use of noise-reducing pavement to the extent feasible on noise-impacted street segments, including but not limited to: ▪ Crane Road south of F Street ▪ Pontiac Street from Crane Road to Oak Avenue ▪ Greger Street from Crane Road to Yosemite Avenue ▪ Sierra Road from Yosemite Avenue to Stearns Road ▪ Maag Avenue south of F Street ▪ River Road west of Yosemite Avenue ▪ Wamble Road south of SR120/SR 108 ▪ Warnerville Road east of Smith Road	Planning Division	Incorporation of feasible noise-reducing pavement specifications shall be considered for future resurfacing/reconstruction projects at the identified roadways.	

TABLE 7-1
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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
▪ G Street west of Yosemite Avenue ▪ I Street west of Yosemite Avenue This Measure shall be incorporated into an implementation program under General Plan Policy NR-1.8, Transportation Noise Mitigation. The implementation of noise reducing pavement should be considered within the established road maintenance schedule.			
SPSP			
Measure 4.7.3c: The City shall require the use of noise-reducing pavement to the extent feasible on noise-impacted street segments within the Sierra Pointe Specific Plan, including but not limited to: ▪ Sierra Road east of Yosemite Avenue ▪ S. Stearns Road south of F Street ▪ Wamble Road south of SR 120/SR 108 ▪ Warnerville Road east of Smith Road	Planning Division	Incorporation of feasible noise-reducing pavement specifications shall be considered prior to approval of public improvement plans for SPSP.	
Hazardous Materials			
SPSP			
Measure 4.8.1a: Measures to Prevent Possible Exposure to Previously Undiscovered On-site Hazardous Materials. The City shall require that, if during site preparation and construction activities, previously undiscovered or unknown hazardous materials are observed or suspected through either obvious or implied measures (e.g., stained or odorous soil), construction contractor(s) would immediately cease all activities in the area of the find. The contractor(s) would immediately contact the Stanislaus County Department of Environmental Resources (County DER) staff for direction on further protocols regarding management of suspected soil or groundwater contamination and interim requirements for remediation, if any. In addition, the project applicant would contract with a qualified consultant registered in the California Department of Toxic Substances Control's (DTSC's) Registered Environmental Assessor Program to assess the situation. The Registered Environmental Assessor would collect soil and/or water samples for laboratory analysis in accordance with County DER oversight to determine whether past activities have adversely affected the site. An environmental professional would analyze the samples for contaminants determined to be a potential health concern. Any contaminated areas would be remediated in accordance with recommendations that County DER, the Central Valley Regional Water Quality Control Board, DTSC, or other appropriate federal, state, or local regulatory agencies makes. Site preparation and construction activities would not proceed until remediation is completed to the satisfaction of County DER.	Planning Division/County Department of Environmental Resources	Ongoing during construction	
Measure 4.8.1b: Abandon On-Site Wells or Septic Systems. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed well drilling contractor to abandon any on-site water wells or septic systems in accordance with County DER requirements.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	

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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.8.1c: Remove and Dispose of Stained Soils. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed contractor to remove and properly dispose of all stained soil in accordance with the disposal facilities requirements as well as federal, state, and local regulations.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	
Measure 4.8.1d: Remove On-Site Debris. Before construction begins and as a condition of grading permits, the project applicant would retain a licensed contractor to remove and properly recycle or dispose debris from the project site before the start of ground-disturbing activities. If soil staining is observed after the removal of debris, soils would be removed and disposed of in accordance with federal, state, and local regulations. If structures are to be demolished on a specific site, a qualified contractor should survey and properly remove/dispose of any asbestos containing building materials or lead-based paints that are identified.	Planning Division/County Department of Environmental Resources	Prior to construction, as a condition of tentative map and/or grading permit	
Measure 4.8.1e: Evaluate Pole-Mounted Transformers for the Presence of Polychlorinated Biphenyls (PCBs). Before construction begins, the project applicant would contact Pacific Gas and Electric (PG&E) to assess the contents of the existing pole-mounted transformers located on the project site. PG&E would conduct an assessment and provide a letter stating whether existing electrical transformers on the site contain PCBs and whether any records of spills exist from such equipment. If PG&E identifies PCB-containing equipment, the maintenance or disposal of the transformer would be subject to the regulations of the Toxic Substances Control Act under the authority of County DER.	Planning Division/County Department of Environmental Resources	Prior to construction. Include as a condition of tentative map, public improvement plan, or grading plan.	
Geology, Soils, Seismicity, and Mineral Resources			
SPSP			
Measure 4.10.3b: The City shall require project applicants to prepare site specific studies to evaluate subsurface conditions relative to the proposed uses. Future site specific studies should include laboratory testing to further define the impact potential of the on-site soils. If significant concentrations of on-site soils with moderate to high liquefaction potential are present, volume changes with increasing or decreasing soil moisture content and should be taken into consideration during design and construction of foundations and slab-on-grade floors. Studies shall be required prior to the approval of a tentative subdivision map. Where no map is required, the City may require such studies with the site plan.	Building Safety Division	Prior to approval of tentative map, or if no map is required, prior to approval of building permit.	
Biological Resources			
SPSP			
Measure 4.11.1a: Conduct Pre-Construction Surveys for Bats and Avoid Maternity Roosting Sites. The City shall require the project applicant to conduct pre-construction surveys by a qualified biologist. If tree removal or ground disturbing activities commence on the project site during the breeding season of native bat species (April 1 to August 31), then a field survey shall be conducted by a qualified bat biologist to determine whether active roosts are present on site or within 50 feet of the project boundaries. Field surveys shall be conducted early in the breeding season before any construction activities begin, when bats are establishing maternity roosts but before pregnant females give birth (April through early May). If no roosting bats are found, then no further mitigation is required. If roosting bats are found, then disturbance of the maternity roosts shall be avoided by halting	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition) between April 1 and August 31.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
construction until the end of the breeding season or a qualified bat biologist removes and relocates the roosting bats in consultation with CDFG.			
Measure 4.11.1b: Conduct Pre-Construction Surveys for California Burrowing Owls and Avoid Loss or Disturbance of Active Nests. The City shall require the project applicant to conduct pre-construction surveys for burrowing owls by a qualified biologist [as approved by the California Department of Fish and Game (CDFG)] within 30-days prior to the start of work activities where land construction is planned in known or suitable habitat. If construction activities are delayed for more than 30 days after the initial preconstruction surveys, then a new preconstruction survey shall be required. All surveys shall be conducted in accordance with the CDFG/California Burrowing Owl Consortium survey protocols. If burrowing owls are discovered in the proposed project site vicinity during construction, the onsite biologist shall be notified immediately. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFG verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. If this criteria is not met, occupied burrows during the nesting season will be avoided by establishment of a no-work buffer of 250-foot around the occupied/active burrow. Where maintenance of a 250-foot no-work buffer zone is not practical, the project sponsor shall consult with the Department of Fish and Game to determine appropriate avoidance measures. Burrows occupied during the breeding season (February 1 to August 31) will be closely monitored by the biologist until the young fledge/leave the nest. The onsite biologist shall have the authority to stop work if it is determined that construction related activities are disturbing the owls. If criterion 1 or 2 above are met and as approved by CDFG, the biologist shall undertake passive relocation techniques by installing one-way doors in active and suitable burrows allowing owls to escape but not re-enter. Owls should be excluded from the immediate impact zone and within a 160-foot buffer zone by having one-way doors placed over the entrance to prevent owls from inhabiting those burrows. After nesting season ends (August 31) and the burrow is deemed unoccupied by the biologist, passive relocation techniques shall take place. Construction activities may occur once a qualified biologist has deemed the burrows are unoccupied.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition).	
Measure 4.11.1c: Conduct Pre-Construction Surveys for Western Pond Turtle and Avoid Loss or Disturbance of Habitat. The City shall require the project applicant to conduct pre-construction surveys by a qualified biologist. These surveys would assess the site to determine if appropriate habitat for western pond turtle exists within or adjacent to the proposed project site. Results of the survey will be provided to the City and the CDFG to ensure that there are proper avoidance and relocation measures in place before construction starts. To minimize impacts to western pond turtle during construction activities were turtle habitat exists, the City will require the project applicant retain a qualified biologist to conduct surveys for western pond turtles within 24 hours of the start of construction. If a turtle is found in the construction area, the biologist shall relocate the turtle to appropriate habitat outside of the impact area. A qualified biological monitor shall be present when construction work occurs adjacent to turtle habitat and/or when western pond turtles have been detected during previous surveys.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition).	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.11.1d: Conduct Pre-Construction Surveys for Nesting Raptors and Other Birds. For any construction activities that will occur between March 1 and August 31 of any given year, the City shall require the applicant to conduct preconstruction surveys for suitable nesting habitat within 0.5 mile of the construction area. Surveys shall be conducted by a qualified biologist. In addition, all trees slated for removal during the nesting season shall be surveyed by a qualified biologist no more than 48-hours before removal to ensure that no nesting birds are occupying the tree. If active nests are found during the survey, the applicant shall implement appropriate mitigation measures to ensure that the species will not be adversely affected, which will include establishing a no-work buffer zone as, approved by CDFG, around the active nest. The no-work buffer may vary depending on species and site specific conditions as approved by CDFG. Appropriate mitigation measures include delaying construction activities until a qualified biologist determines that juveniles have fledged the nest(s), or establishing a "no construction" zone buffer around the nest. The results of the survey shall be documented in a letter report that is distributed to the California Department of Fish and Game. These measures will ensure compliance with the Migratory Bird Treaty Act and California Department of Fish and Game Code 3503.5.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition) between March 1 and August 31.	
Measure 4.11.1e: Avoid or Identify and Compensate for Loss of Vernal Pool Habitats and Species. If during pre-construction surveys vernal pool habitat is found on the subject site, then the City shall ensure that the project applicant retain a qualified biologist to evaluate the site for the suitability of special-status vernal pool invertebrates. Based on the suitability evaluation, the project applicant shall either (a) have protocol level surveys preformed to establish presence or absence or (b) assume presence and mitigate. If protocol level surveys determine that special-status vernal pool invertebrates are present or the applicant assumes presence, then the applicant shall provide on-site habitat preservation in perpetuity **and** purchase habitat creation credits at an USFWS approved mitigation bank **and/or** restore/enhance habitat as approved by USFWS to fully compensate for direct and indirect effects to habitat for federally listed vernal pool species at a 2:1 preservation ratio and 1:1 creation ratio for direct effects to vernal pool habitat and a 2:1 preservation ratio for indirect effects to vernal pool habitat. Habitat compensation must occur prior to or concurrent with the development of a project and must be approved by the USACE and USFWS prior to the initiation of construction activities.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1f: Avoid or Identify and Compensate for Loss of Valley Elderberry Longhorn Beetle. If during pre-construction surveys elderberry shrubs are found on the subject site, then the City shall ensure that the project applicant will: a) Conduct protocol-level elderberry shrub surveys in the proposed project area. Before the beginning of ground disturbance within 100 feet of any area that may support elderberry, a qualified biologist shall conduct an elderberry shrub survey consistent with USFWS protocols for conservation of valley elderberry longhorn beetle (USFWS, 1999). All elderberry shrubs with potential to be affected by project activities shall be mapped and the number of stems greater than 1 inch in diameter on each shrub that may require removal shall be counted. Elderberry plants with no stems measuring 1 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. b) Protect elderberry shrubs from disturbance. The applicant, through coordination with the biologist, shall ensure to the extent feasible and practicable that the footprint of project features, staging	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
areas, and access routes are designed to ensure that no project activities would affect an elderberry with stems measuring 1 inch in diameter at ground level. Buffers of at least 100 feet shall be established around all elderberry shrubs with stems measuring 1 inch in diameter at ground level. The buffer shall be clearly identified in the field by flagging or exclusion fencing. All project activity shall be prohibited within the buffer areas. c) If effects on shrubs cannot be avoided, then develop and implement a mitigation plan approved by the USFWS. If maintaining 100-foot protection buffers is not feasible, consultation with USFWS will be required and an incidental take permit may be required. During this consultation, an appropriate and feasible mitigation plan shall be developed and provided to USFWS for approval (USFWS, 1999).			
Measure 4.11.1g: Avoid or Identify and Compensate for Loss of Annual Grasslands Habitat. The City shall ensure that the project applicant avoid or minimize the loss of annual grassland habitat, including Swainson's hawk (foraging habitat). To compensate for the loss of Swainson's hawk foraging habitat, the California Department of Fish and Game (CDFG) guidance will be evaluated to determine potential foraging habitat mitigation needs at a project site. An appropriate mitigation ratio will be developed in coordination with CDFG and will be dependent upon the development's distance to the nearest known Swainson's hawk nest site. A typical mitigation ratio may consist of a 0.75:1 requirement to reduce potential effects related to foraging habitat loss.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1h: Avoid or Identify and Compensate for the Loss of Special-Status Plants. The City shall ensure that the project applicant avoid or minimize the loss of sensitive or special status plant species. To compensate for the loss of special status plants, the City shall ensure that vegetated portions of the project site including possible wetland habitats conduct surveys by a qualified botanist for special-status plants following established CDFG *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (CDFG, 2009). Additional compensation measures will include the following: ▪ Avoid existing, known populations where possible; ▪ Minimize impacts by restricting removal of plants to a few individuals of a population where possible; ▪ Prepare a Mitigation and Monitoring Plan to relocate plants and/or seed banks or reintroduce new populations in suitable habitat and soil types within the on-site Preserve or at a CDFG or USFWS-approved off-site location; ▪ Restore or enhance suitable habitat within the Plan Area under the Wetland Management Plan. The Wetland Management Plan would include specific goals to improve habitat conditions for these species within the Preserve, and would include a long-term (at least 5 years) monitoring component to ensure the success of restoration and enhancement activities.	Planning Division	Prior to any ground disturbing activities (including grading, clearing & grubbing, or demolition). Compliance must be demonstrated prior to issuance of building permit.	
Measure 4.11.1i: Conduct Worker Awareness Training. When special-status species or sensitive natural communities are found within the boundaries of proposed projects, then the City shall ensure that the project applicant (or construction contractor) implement Worker Environmental Awareness Program (WEAP) training for construction crews and the construction foreman prior to the commencement of any construction activities. The WEAP training would be conducted by a qualified wildlife biologist. The	Planning Division	Prior to start of construction.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
training would include a brief review of the special status species and other sensitive resources that could occur in the project area (including their life history and habitat requirements and where on the project site they may be found) and their legal status and protection. The program would also cover all relevant mitigation measures, permit conditions and BMP plans, such as the Stormwater Pollution Prevention Plan (SWPPP) and/or erosion control and sediment plan. During WEAP training, construction personnel would be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. A designated environmental inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions and that all persons working on site have attended a WEAP training session. WEAP training sessions would be conducted as needed for new personnel brought onto the job throughout the duration of construction.			
Measure 4.11.1j: Limit Project Access Routes/Staging Areas. The City shall ensure that the project applicant (or construction contractor) limit the total number of access routes, number and size of staging areas, and the total area of project activity to those areas identified in the approved construction drawings and/or plans or as otherwise approved per permit conditions. Access routes and project boundaries would be clearly marked at all times. Access routes for heavy equipment to and from the project site would be restricted to established roadways to minimize habitat disturbance. The storing of construction equipment, vehicles, and supplies would be restricted to the designated construction staging areas outside of the proposed Preserve, wetland avoidance areas, and riparian buffer areas. All fueling, cleaning and maintenance activities of vehicles and other equipment would be performed only in designated areas and at least 250 feet away from avoided/preserved habitats. As part of WEAP training, all workers would be informed of the importance of preventing spills and appropriate measures to take in the event of a spill. All spills would be cleaned up immediately.	Planning Division	Prior to issuance of grading permits, encroachment permits or approval of public improvement plans.	
Measure 4.11.1k: Protect Preserved and Avoided Habitats During Construction-Related Activities. The City shall ensure that the project applicant (or construction contractor) avoid and preserve sensitive habitats from construction activities. Habitat protection measures would include the following: ▪ A USFWS-approved biologist (monitor) would inspect all construction-related activities at the project site to ensure that no unauthorized take of listed species or destruction of their habitat occurs. The biologist would have the authority to stop any activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also would be required to report immediately any unauthorized impacts to the USFWS and the CDFG. ▪ Adequate fencing would be placed and maintained around all avoided (preserved) vernal pool habitat to prevent direct impacts from construction. The location of fencing shall be marked in the field with stakes and flagging and shown on the construction drawings.	Planning Division	Prior to start of construction.	
Measure 4.11-2a: Implement Water Quality Best Management Practices to Minimize Impacts to Sensitive Natural Communities. The City shall ensure that the project applicant (or construction contractor) implement all applicable water quality best management practices (BMPs) during construction-related activities. Use of BMPs for stormwater control is expected to reduce the potential for preserved and avoided sensitive natural communities (including wetlands, vernal pools, and other sensitive aquatic habitats) to be indirectly affected by sediment-laden discharges from construction sites. The performance and	Planning Division	Ongoing during construction. SWPPP may be required prior to start of construction (for projects over one acre).	

TABLE 7-1
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Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
effectiveness of these BMPs would be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where the verification of containment reduction or elimination is required to determine the adequacy of the measures. BMPs to be implemented would include, but are not limited to, the following: ▪ All disturbed surfaces or stockpile areas would be protected with erosion control measures in place during the period of October 1 through April 30. ▪ Erosion control or BMP measures will be implemented for ground-disturbance areas located uphill and within 500 feet from a water body. BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) would be employed per the product specifications for disturbed areas, stockpiled soil, and along culverts and drainage ditches on active construction sites and in downstream areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs would be part of the contractor's project specifications. The construction specifications shall contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, trenching, grading, or other surface-disturbing activities outside of the designated construction area. Signs shall be erected along the protective fencing at a maximum spacing of one sign per 50 feet of fencing. The signs shall state: "This area is environmentally sensitive; no construction or other operations may occur beyond this fencing. Violators may be subject to prosecution, fines, and imprisonment." The signs shall be clearly readable at a distance of 20 ft, and shall be maintained for the duration of construction activities in the area. Performance and adequacy of the measures would be determined visually by site construction management and verified by the City of Oakdale and Central Valley Regional Water Quality Control Board as appropriate. ▪ Dirt and debris would be swept from paved areas in construction zones on a daily basis as necessary to remove excessive accumulations of silt, mud or other debris. Sweeping and dust removal would be implemented by the contractor and oversight of these operations the responsibility of the construction site superintendent. ▪ All exposed/disturbed areas, left barren of vegetation due to project related activities, would be seeded, mulched and fertilized with a blend of native and/or naturalized grass and forb species. Locally native wildflower and/or shrub seeds may be included in the seed mix. Planted areas must achieve an 80% acreage coverage rate to be considered successful. All exposed areas where seeding is considered unsuccessful after 90 days, would received appropriate soil preparation and a second application of seed/mulch/fertilizer. Quarterly monitoring events would be conducted for a period of one year or until the target goal is met. The application, schedule, and maintenance of the vegetative cover would be the responsibility of the contractor and requirements to establish a vegetative cover would be included in the construction contractor's project specifications. ▪ If discharges of sediment or hazardous substances to drainage ways are observed, construction would be halted until the source of contamination is identified and remediated. Visual indications of such contamination include an oily sheen or coating on water, and noticeable turbidity (lack of clarity) in the water.			

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
Measure 4.11.2b: Protect Sensitive Tree Resources Adjacent to Construction Activities. The City shall ensure that the project applicant (or construction contractor) implement all applicable measures prior to and during construction-related activities to protect sensitive tree resources. Sensitive tree resources adjacent to construction activities may require additional protection. Where feasible, buffer zones should include a minimum one-foot-wide buffer zone outside the dripline for oaks and landmark trees. The locations of these resources should be clearly identified on the construction drawings and marked in the field. Fencing or other barriers would remain in place until all construction and restoration work that involves heavy equipment is complete. Construction vehicles, equipment, or materials should not be parked or stored within the fenced area. No signs, ropes, cables, or other items should be attached to the protected trees. Grading, filling, trenching, paving, irrigation, and landscaping within the driplines of oak trees should be limited. Grading within the driplines of oak trees should not be permitted unless specifically authorized by a Certified Arborist. The City of Oakdale shall ensure that project applicants will comply with the City of Oakdale's Municipal Code, Chapter 32, *Section 32-7 Trimming or removal of trees generally*. Prior to construction, the applicant shall conduct a tree survey for oak trees that may be impacted by the project. The applicant shall coordinate with the City of Oakdale's Building Official to ensure that impacts to oak trees and heritage oak trees are avoided to the extent feasible. In the event that oak trees must be removed, the applicant shall coordinate with the City of Oakdale to determine the number of trees that would be affected. Removed trees will be replaced at a ratio of 2:1. All trees planted shall be purchased from a locally adapted genetic stock obtained within 50 miles and 1,000 feet in elevation of a project site. A Maintenance and Monitoring Plan shall be developed to provide cages or support stakes for each sapling, identify a weed control schedule, and outline a watering regime for the plantings. If the site does not have adequate room for replanting trees, the City may require payment to a tree replacement fund. Annual monitoring of the planted trees for three years shall be conducted following completion of construction to ensure the continued survival of retained native trees and newly planted trees. A Certified Arborist shall be contacted to discuss success criteria and required length of monitoring prior to conducting the first annual survey.	Planning Division	Tree survey shall be completed prior to issuance of building or grading permit. Monitor protection measures during construction. Post-construction monitoring annually for three years.	
Measure 4.11.2c: Avoid or Identify and Compensate for Loss of Wetlands and other Waters of the U.S. The City shall ensure that the project applicant of subsequent projects within the Specific Plan area shall reconfigure project designs, to the maximum extent feasible, to avoid waters of the U.S., including wetlands. Projects shall minimize disturbances and construction footprints near such areas to the extent feasible. Where impacts are identified to specific wetlands or other Waters of the U.S., the City shall ensure that the project applicant shall retain a qualified biologist to perform a formal wetland delineation to be submitted to the U.S. Army Corps of Engineers (ACOE) for verification. If it is determined that the project will impact waters of the U.S., The City shall ensure that the project applicant will obtain all required permit approvals from the ACOE, RWQCB, CDFG and any other agencies with permitting responsibilities for construction activities within jurisdictional features. Permit approvals and certifications would likely include the following: ▪ Clean Water Act Section 404. Permit approval from the ACOE shall be obtained for the placement of	Planning Division	Demonstrate compliance prior to issuance of building or grading permit.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
dredge or fill material in waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. The Section 404 permit application would require a delineation of wetlands and other waters of the U.S., a jurisdictional determination from the ACOE, and preparation of a Pre-Construction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features. State and federal regulations require that the project applicant avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands. Wetlands that cannot be avoided must be compensated to result in "no net loss" of wetlands to ensure that the project would maintain the current functions and values of onsite wetland habitats. ▪ Clean Water Act Section 401 Water Quality Certification/Porter-Cologne Act. Approval of Water Quality Certification (WQC) under the CWA and/or Waste Discharge Requirements (WDRs) under the Porter-Cologne Act shall be obtained from the RWQCB for work within jurisdictional waters. Application for a WQC requires an application and supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Application for a WDR requires an application and supporting materials, including a characterization of the discharge which includes but is not limited to: design and actual flows; a list of constituents and the discharge concentration of each constituent; a list of other appropriate waste discharge characteristics; a description and schematic drawing of all treatment process; a description of any BMPs used; and a description of disposal methods. Proof of CEQA compliance is also required. ▪ California Fish and Game Code Section 1602. CDFG requires a Streambed Alteration Agreement for activities that result in alteration of the bed or bank of a stream (typically the top of bank or edge of riparian habitat, whichever is greater), or that adversely impact fish or wildlife resources. The notification package must include supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Additionally, the City shall ensure that permanent degradation of aquatic habitats will be compensated for at a 1:1 ratio through the purchase of similar habitat value from a USFWS approved conservation bank. Compensation shall take the form of wetland and/or riverine preservation or creation in accordance with U.S. Army Corps of Engineers and California Department of Fish and Game (CDFG) mitigation requirements, as required under project permits. Preservation and creation may occur onsite through a conservation agreement or offsite through purchasing credits at a U.S. Army Corps of Engineers approved mitigation bank.			
Energy and Global Climate Change			
2030 General Plan and SPSP			
Measure 4.13.2: Implement the City of Oakdale Climate Action Plan. As previously discussed, the Oakdale CAP contains many GHG reduction goals and strategies related to 5 broad topics: energy efficiency, transportation and land use, solid waste reduction, and water and wastewater use. For example, energy reduction strategies include promoting energy efficiency rebates, programs, and benchmarking for residential, commercial, and industrial users. All industrial users over 3,000 sf will be required to offset 20% of their building energy consumption with on-site renewable energy or 40% of their	Planning Division	Implement following approval of CAP. Monitor progress annually as part of General Plan progress report.	

TABLE 7-1
SIERRA POINTE SPECIFIC PLAN MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Monitoring Responsibility	Timing	Sign Off
energy with off-site renewable energy by 2019. CAP strategies encourage higher-density development and commute trip reduction programs, as well as building out the proposed bicycle network and 75% solid waste diversion by 2020. With implementation of the above City policies and the City of Oakdale CAP reduction strategies, buildout of the 2030 General Plan Update would achieve more than a 29% reduction compared to BAU and would thus not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment, nor would the General Plan conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.			

CHAPTER 8
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Attachment 1

Urban Water Management Plan

ESA

City of Oakdale

Urban Water Management Plan

January 2009

HDR ONE COMPANY | Many Solutions™

Urban Water Management Plan

City of Oakdale

January 2009

1/20/09

Prepared under the responsible charge of

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Acknowledgements

This 2005 UWMP represents a collaborative effort between HDR and the City of Oakdale. We would like to take an opportunity to thank the following individuals for their participation:

David Myers	Acting Public Works Director / City Engineer, City of Oakdale
Danelle Stylos	Community Development Director, City of Oakdale
Anthony Smith	Administrative Analyst, City of Oakdale

List of Abbreviations

AB 11X	Assembly Bill 11X
AB 797	Assembly Bill 797
AB 1869	Assembly Bill 1869
AB 2661	Assembly Bill 2661
ac	acre
Act	Urban Water Management Act
AFY	acre-feet per year
Association	Stanislaus and Tuolumne Groundwater Basin Association
CIMIS	California Irrigation Management Information System
City	City of Oakdale
CUWCC	California Urban Water Conservation Council
Department	City of Oakdale Public Works Department
DMM	demand management measure
ET_o	evapotranspiration
gpcd	gallons per capita day
gpm	gallons per minute
IRWMP	Integrated Regional Groundwater Management Plan for the Modesto Subbasin
MG	million gallons
mgd	million gallons per day
MOU	memorandum of understanding
SB 221	Written Verification of Water Supply
SB 610	Water Supply Assessments
SCADA	Supervisory control and data acquisition
Subbasin	Modesto Groundwater Subbasin
TDS	total dissolved solids
ULF	ultra-low flush
UWMP	Urban Water Management Plan

1.0 Introduction

The City of Oakdale (City) is located in Stanislaus County, approximately 15 miles northeast of Modesto along State Highway 120 at its junction with State Highway 108. The Stanislaus River flows along the northern edge of the City. The City extracts all of its domestic water supply from groundwater beneath the City via seven active wells scattered throughout the City. The majority of the water system is controlled and monitored by a remote telemetry system located at the Public Works Center at Fifth and I Street in southeast Oakdale.

1.1 Background

The Urban Water Management Act (Act) was created by Assembly Bill 797 (AB 797), which was signed into law by Governor Deukmejian on September 21, 1983. The Act required that urban water suppliers (i.e. municipal water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet annually) prepare and adopt Urban Water Management Plans containing certain specified elements.

The Act was amended by Assembly Bill 2661 (AB 2661), which was signed into law by Governor Deukmejian on July 18, 1990. AB 2661 deleted the January 1, 1991 termination date specified in AB 797. AB 2661 also expanded the elements that are to be addressed in Urban Water Management Plans.

The Act was also amended by Assembly Bill 1869 (AB 1869), which was signed by Governor Wilson on October 13, 1991. AB 1869 requires that urban water suppliers update (not just review) Urban Water Management Plans every five years to include projections of both potable and recycled water use, identify current reclamation practices, address additional alternative conservation measures, and describe findings, actions, and planning related to a number of water conservation and reclamation measures.

The Act was further amended by Assembly Bill 11X (AB 11X) signed by Governor Wilson on October 13, 1991. AB 11X required that urban water suppliers prepare an Urban Water Shortage Contingency Plan as an amendment to its Urban Water Management Plan. Water Shortage Contingency Plans must be updated every five years and specify proposed measures for responses to short- and long-term water shortages.

1.2 Purpose

The City has prepared this Urban Water Management Plan (UWMP) to ensure the efficient use of available water supplies, describe and evaluate the existing water system and historical and projected water use, evaluate current and projected water supply reliability, describe and evaluate demand management measures, and provide water shortage contingency plans as required by the Act.

By preparing this UWMP, the City continues its commitment to intelligent planning and management of its water supplies. With this document, the City meets the UWMP requirements for funding under the Proposition 50, Chapter 8 Integrated Regional Water Management Plan Grant Program. Data from the UWMP can also be linked to California Water Plan Updates. Additionally, a complete UWMP serves as a fundamental document for Water Supply Assessments (SB 610) and Written Verification of Water Supply (SB 221) requirements.

1.3 Agency Coordination

The City is a member of the Stanislaus and Tuolumne Rivers Groundwater Basin Association (Association), which includes the six agencies covering the Modesto Groundwater Subbasin (Subbasin). Through involvement in the Association, the City works together with the five other water agencies to develop solutions for groundwater management. The City coordinated the preparation of this UWMP with the Association by providing a copy of the Draft 2005 UWMP for review. The Association was also sent a Notice of Intention to Adopt, a copy of which is included in Appendix B.

By coordinating with neighboring water agencies through the Association, the City will ensure that its groundwater supply needs, as outlined in this UWMP, will be incorporated into regional groundwater management efforts.

1.4 City and County Notification and Participation

Stanislaus County was sent a copy of the UWMP and a notice of intention to adopt.

1.5 Public Participation

The City encouraged public participation in the development of the 2005 UWMP and provided opportunities for public review and comment. On November 26, 2008, the City placed a Notice of Intention to Adopt on its website, stating that its UWMP was being updated and that a public review period would be provided to address comments and concerns from members of the community. The notice stated that the public review period would be scheduled from November 26, 2008 to December 29, 2008. A copy of this Notice of Intention to Adopt is included in Appendix B.

On February 2, 2009, the City conducted a public hearing to hear comments from the public regarding the UWMP. This hearing provided an opportunity for the City's customers/residents and employees in the area to learn about the water supply situation and the plans for providing a reliable, safe, high-quality water supply for the future. Information regarding the public hearing and the public review period is included in Appendix B. This UWMP was finalized after the public review period and was placed on the City's website.

1.6 Plan Adoption

The City prepared this 2005 UWMP during the fall of 2008. The plan was adopted by its City Council on February 2, 2009, and was submitted to the California Department of Water Resources within 30 days of council approval. See Appendix B for a copy of the resolution.

1.7 Other Agencies

Upon completion, this UWMP was submitted to the following agencies not previously listed:

- California Department of Public Health
- California State Library
- Oakdale Public Library

1.8 Resource Maximization/Import Minimization Plan

The City of Oakdale understands that water is a limited, though renewable, resource and that a long-term reliable supply of water is essential to protect the local and state economy. It also recognizes that, while conservation and efficient use of water is a statewide concern, planning for this use is best done at a local level.

The primary areas of focus for the City are to (1) maximize the efficient use of water, (2) increase its water conservations measures, and (3) implement methods to maintain local and regional groundwater levels and quality while meeting the increased water demands required to accommodate the City's planned growth.

2.0 Supplier Service Area

The City is located along State Highway 120 at the junction of State Highway 108 in the north-central portion of the San Joaquin Valley, lying along the Stanislaus River within the northeastern part of Stanislaus County. The City's Public Works Department (Department) is the sole water purveyor for the City of Oakdale.

The Department's service area (shown in Figure 1) is contiguous with the City's boundaries and covers approximately 4.9 square miles. The City also serves three areas outside of the City limits, including the airport, the Oakdale Wastewater Treatment Plant, and a City park known as Kerr Park. The service area includes a mixture of residential, commercial, and industrial land uses, and is characterized by essential flat terrain.

2.1 Population

The City's 2005 population is approximately 18,665. The current Oakdale General Plan, which was initially adopted in August 1994 and revised in December 2003, estimated a maximum growth rate of 3 percent per year. The City's 2005 and projected 2015 populations are 18,665 and 29,000 residents, respectively. The buildout capacity of the City's service area is projected to be limited to approximately 36,000 residents.

A summary of historic and projected population estimates between 2005 and 2030 are presented in Table 1. Population forecasts shown for 2010 and 2020 are based on the projected 2015 population of 29,000 residents and a growth rate of 3 percent.

Table 1. Current and Projected Population

2005	2010	2015	2020	Buildout[b]
18,665[a]	25,015	29,000	33,620	36,000

[a] Historic estimate
[b] Projected to occur in 2023

2.2 Climate

Oakdale has a moderate climate throughout the year, with winter temperatures ranging from the mid 30s to the high 60s and summer temperatures from the 50s to the low 100s. Annual average rainfall is approximately 13 inches, with most rainfall occurring between November and April. Reference evapotranspiration (ET_o) values, which serve as indicators of how much water is required to maintain healthy agriculture and landscaping, range from 0.9 to 7.85 inches per month. Temperature, rainfall, and evapotranspiration averages for the City are presented in Table 2.

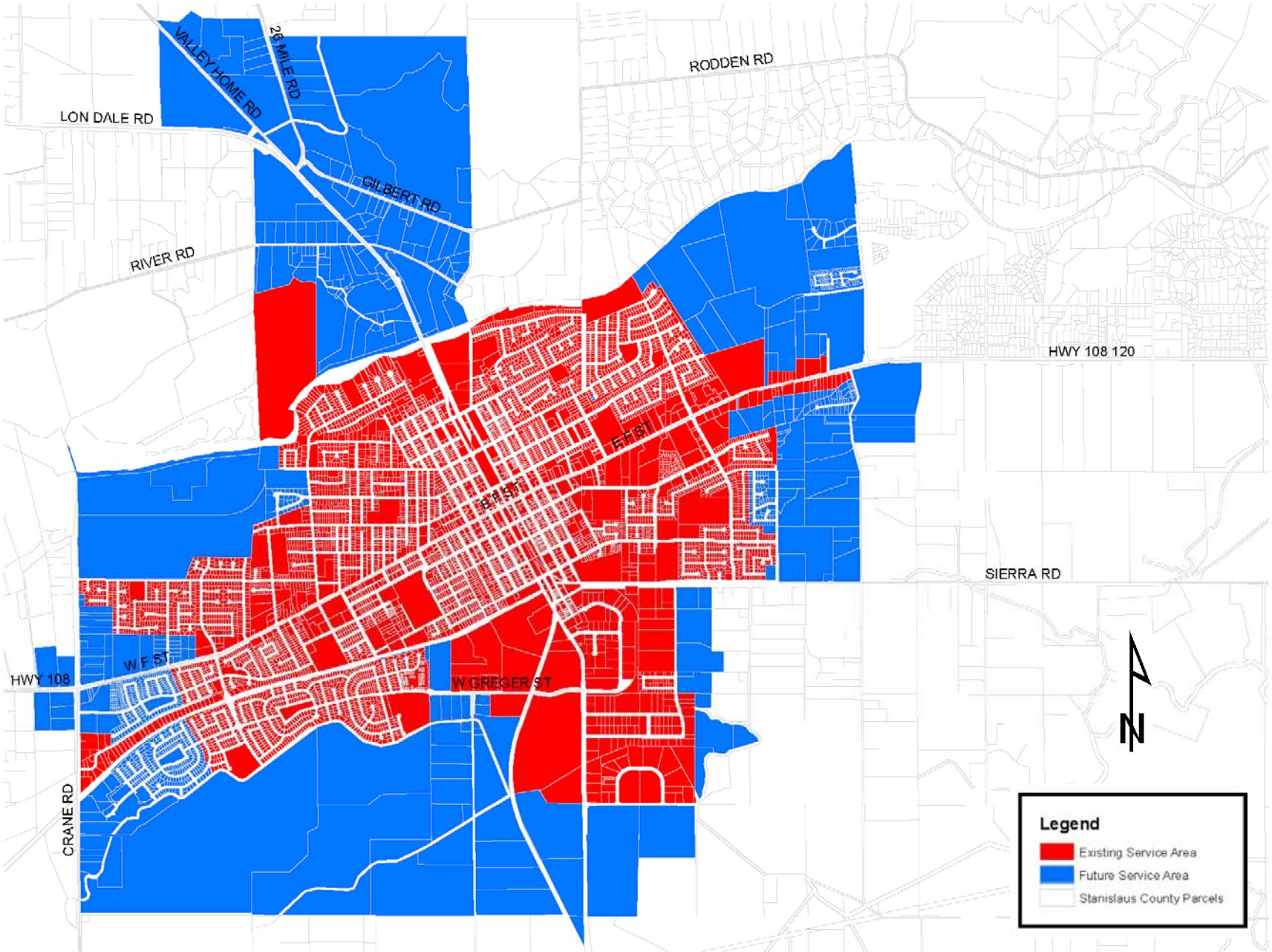


Figure 1. Potable Water Service Area

Table 2. Service Area Climate

Parameter[a]	Units	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
ETo[b]	inches	0.87	1.71	3.43	5.24	6.70	7.40	7.85	6.75	4.93	3.37	1.66	0.87	50.78
Rainfall)[c]	inches	2.61	2.14	2.21	1.34	0.45	0.12	0.00	0.02	0.18	0.65	1.24	2.37	13.33
Temperature[c]	°F	43.8	48.7	52.1	57.1	64.3	71.7	77.1	75.5	71.0	63.3	53.0	45.3	60.2

a. Monthly average values
b California Irrigation Management Information System, Site 194 Oakdale
c. Western Regional Climate Center. Oakdale Woodward Dam, California (046305)

2.3 Other Demographic Factors

Oakdale's economy is centered around agriculture, food manufacturing, and tourism. Due to its location at the eastern edge of California's Central Valley, the City is known as the "The Gateway to Yosemite." ConAgra Foods, Inc., which manufacturers canned tomato products, is also located within the City's service area.

The demographic factors affecting the City's water supply management planning include data on the largest customers, including those listed in Table 3 below. For comparison purposes, the total groundwater produced by the City's wells in 2005 was 4,927 acre-ft.

Table 3. Large Water Customers

Customer	2005 Water Use, (MG)	Percent of Total Use
Oakdale School District	117.03	2.38
Stan County Housing Authority	36.46	0.74
Oak Valley Hospital Dist	25.59	0.52
Oakdale Convalescent Hosp	19.87	0.40
United Can	19.50	0.40
Richland Grocery Store	17.51	0.36
Express Car Wash	17.09	0.35
Golden Empire Apts	16.38	0.33
Davies/River Paradise Mobile	15.84	0.32
Big Oak Trailer Park	12.32	0.25
Ramada Inn	11.53	0.23
PAM Inc, Oakdale Apartments	11.51	0.23
7-11 Materials	10.25	0.21
Hank Fisher Properties	9.21	0.19
Oak Haven Senior Apartments	7.96	0.16
Wrangler Apartments	7.58	0.15
Ed Rapinchuk Apartments	7.03	0.14
Best Western Rama-Inn	6.62	0.13
Harvest Apartments	3.45	0.07
Sum Total	372.8	7.6

3.0 Water Supply Source Analysis

3.1 Existing Water Supply

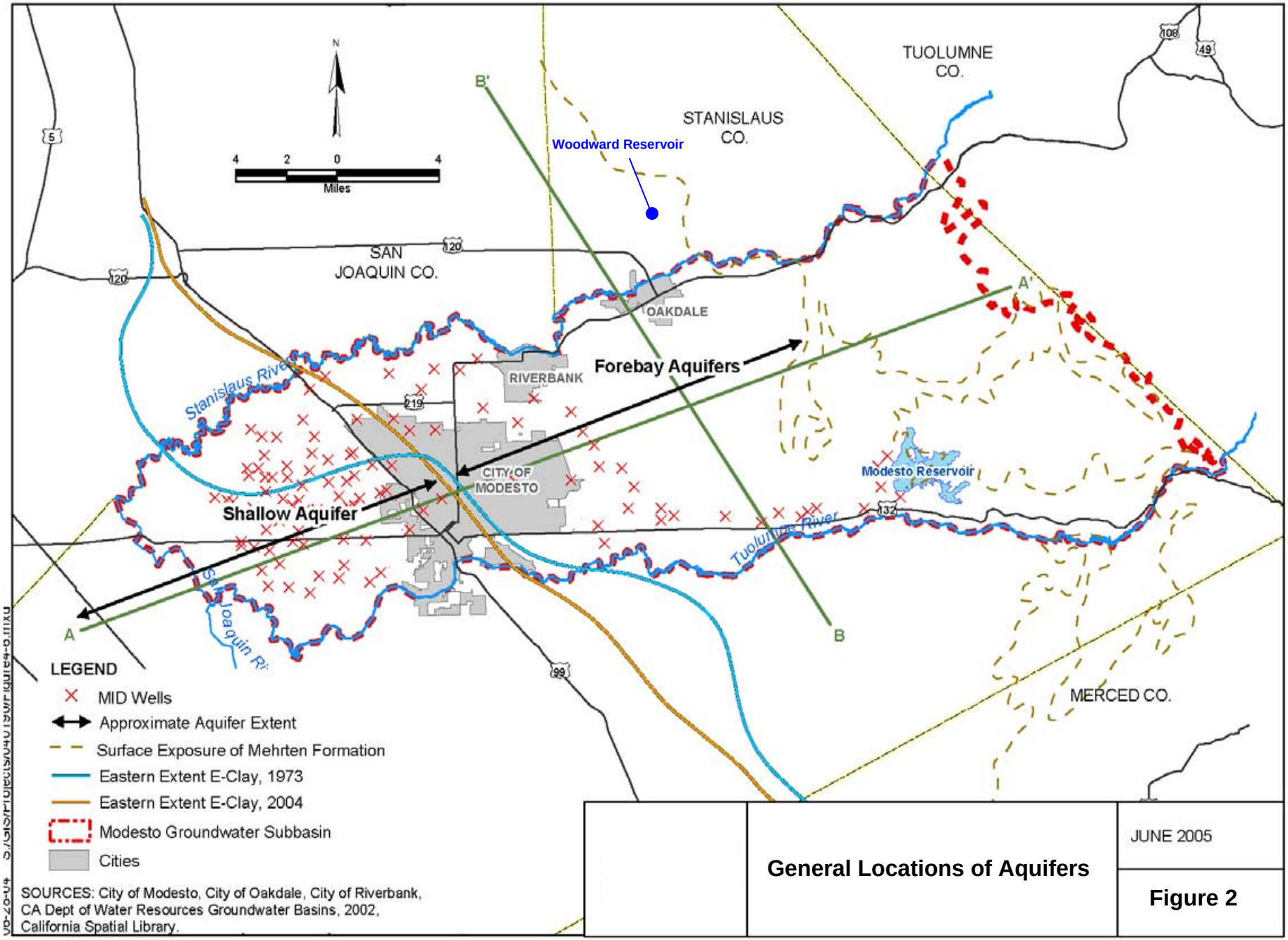
The City relies on groundwater pumped from the Modesto Groundwater Subbasin as its sole source of supply. The Modesto Groundwater Subbasin is a part of the San Joaquin Hydrologic Basin, which straddles portions of both the Sacramento and San Joaquin Valleys and is not currently adjudicated. The Stanislaus and Tuolumne River Groundwater Basin Association released the Final Draft of the Integrated Regional Groundwater Management Plan (IRGMP) for the Modesto Subbasin in June 2005. A copy of the June 2005 groundwater management plan has been included in Appendix A for reference.

The primary hydrogeologic units in the Modesto Subbasin include both consolidated and unconsolidated sedimentary deposits. Consolidated deposits include (1) the Ione Formation, (2) the Valley Springs Formation, and (3) the Mehrten Formation. The consolidated deposits lie in the eastern portion of the subbasin and generally yield small quantities of water except for the Mehrten Formation. The unconsolidated deposits include (1) continental deposits, (2) lacustrine and marsh deposits, (3) older alluvium, (4) younger alluvium, and (5) flood-subbasin deposits. The continental deposits and older alluvium are the main water-yielding units in the unconsolidated deposits.

The Mehrten Formation confined aquifers, which the City draws all its water supply from, differ from the shallow, deep, and forebay aquifers found in this subbasin. Because younger sediments are not resting over the Mehrten Formation confined aquifers and acting as a reservoir, these particular aquifers receive only local and seasonal recharge. Local recharge to the confined aquifers is likely to be derived from the Modesto and Woodward Reservoirs and from the area where the Stanislaus and Tuolumne Rivers cut across the surface exposure of the Mehrten Formation. Between these recharge sources, there will be limited seasonal recharge by rain and groundwater levels will likely have the greatest changes. At some depth, the Mehrten Formation confined aquifers are likely to contain ancient water that has higher total dissolved solids (TDS) concentrations. Because recharge is limited, these aquifers in particular need careful monitoring.

Groundwater contours developed from the spring of 2000 show a general east-west flow direction, with recharge occurring between the Stanislaus and Tuolumne Rivers. The contours show that the Tuolumne River and portions of the Stanislaus River near Oakdale are gaining streams.

Groundwater recharge to the Mehrten Formation confined aquifers is from areas located between the eastern and western exposure of the Mehrten Formation, as shown in Figure 2. For the most part, the recharge is limited to seasonal precipitation that falls directly on the exposed aquifers. Some recharge is likely occurring where the Stanislaus and Tuolumne Rivers cross the aquifers. Recharge also probably occurs from the Modesto and Woodward Reservoirs.


TUOLUMNE CO.
STANISLAUS CO.
SAN JOAQUIN CO.
MERCED CO.
Woodward Reservoir
Modesto Reservoir
OAKDALE
RIVERBANK
CITY OF MODESTO
Forebay Aquifers
Shallow Aquifer
Stanislaus River
Tuolumne River
San Joaquin Ri
A
A'
B
B'
4 2 0 4
Miles
LEGEND
MID Wells
Approximate Aquifer Extent
Surface Exposure of Mehrten Formation
Eastern Extent E-Clay, 1973
Eastern Extent E-Clay, 2004
Modesto Groundwater Subbasin
Cities
SOURCES: City of Modesto, City of Oakdale, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002, California Spatial Library.
General Locations of Aquifers
JUNE 2005
Figure 2

The IRWMP states that, according to the City and DWR hydrographs, "groundwater levels are currently declining at a rate of about one foot per year." However, the justification for this finding could not be verified using monitoring data obtained from the City of Oakdale. Conversely, the City's most recent well monitoring datasets show higher groundwater depths as compared to 2000 levels (see Figure 3).

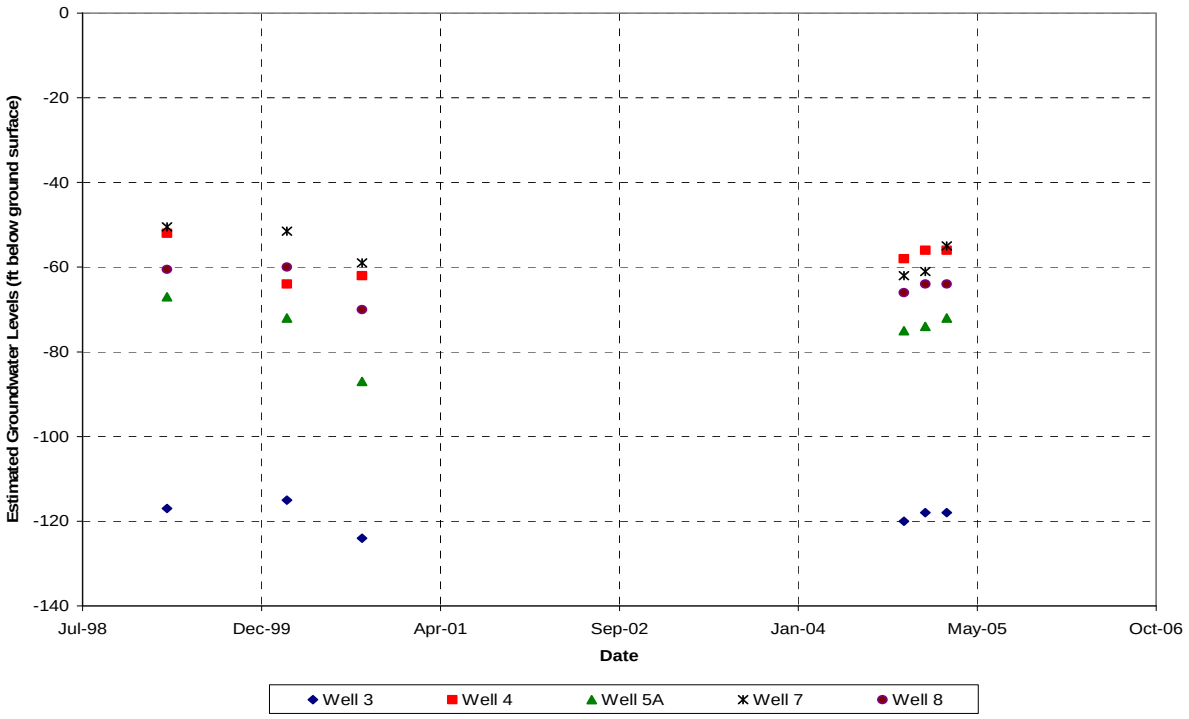


Figure 3. Historic Groundwater Levels

3.1.1 Water Supply Facilities

The City's water system consists of seven active wells that supply groundwater to a distribution pipe network. Currently, there is one 0.5-MG steel storage reservoir located at the intersection of Valley View Drive and the Stanislaus River bluff. There is another concrete reservoir adjacent to the steel reservoir, but it is no longer in use. The locations of the wells and storage reservoir are shown in Figure 4.

3.1.2 Groundwater Supply

The water quality provided by these wells and underground aquifers meets the standards of Title 22 and is suitable for direct potable use without treatment. The potable water system is permitted to operate by the California Department of Public Health under a permit granted on August 20, 1964. The permit was amended on March 21, 1989, to include new Wells 5A and 6, which were added to the system. On January 31, 1997, the permit was again amended to add Wells 7 and 8 as active sources of supply and to change the status of Well 1 to inactive. Well 1 was later destroyed by the City.

Figure 4. Well and Storage Facility Locations

A summary of the City's wells, their capacities, and operating status is shown in Table 4. Historic groundwater pumping volumes between 1998 and 2005 are shown in Table 5. The 7 active wells have a total combined capacity of 15,200 gpm or 21.9 MG. Each well is controlled by either a local pressure switch at the wellhead, a level transmitter located at the 0.5-MG storage reservoir, or a combination of both. The majority of the wells are controlled and monitored by a remote SCADA system located at the Public Works Center. The SCADA system monitors various system conditions, such as pressure and flow rate for the well, and has the ability to record and log this data.

Table 4. Groundwater Well Capacities

Well Number	Status	Well Capacity	
		(gpm)	(MG)
1	Destroyed		
2	Active; Season	600	0.9
3	Active; Year Round	1,800	2.6
4	Active; Year Round	1,600	2.3
5A	Active; Year Round	2,000	2.9
6	Active; Year Round	2,100	3.0
7	Active; Year Round	2,100	3.0
8	Active; Year Round	3,000	4.3
9	Inactive	2,000	2.9
Total		15,200	21.9

Table 5. Historic Groundwater Production

Year	Groundwater Production (AFY)	Percent of Total Water Supply (%)
1998	3,704	100
1999	4,220	100
2000	4,385	100
2001	4,395	100
2002	4,599	100
2003	4,799	100
2004	4,775	100
2005	4,927	100

3.1.3 Surface Water Supply

The City relies solely on groundwater supplies. No surface water supplies are used for domestic potable water use within the City's service area.

3.1.4 Recycled Water Supply

The California Regional Water Quality Control Board, Central Valley Region adopted the latest Water Discharge Requirements (Order No. 5-01-094) for the Oakdale Wastewater Treatment Plant on April 27, 2001. Following treatment, treated effluent is discharged to one of several

evaporation/percolations ponds located within the treatment plant site. According to the City's 2003 through 2005 monitoring records, it is estimated that approximately 1,950 AFY of secondary treated recycled water is percolated into the underlying groundwater.

3.1.5 Water Distribution System

There are two active booster pumping stations operating within the City's service area. One (the Burchell Hill Booster Station) is located in northeast Oakdale adjacent to the 0.5-MG reservoir. This particular station serves the City's upper pressure zone, as well as a small area located in north Oakdale near Sky View Drive and Melva Avenue. The other booster pumping station is located at the Well 5A site and provides water to a higher pressure zone serving the southern part of Oakdale.

The Oakdale water distribution system consists of mains varying in size from 2 to 16 inches in diameter. The entire distribution system consists of approximately 90 miles of pipe.

The City also operates a separate small water system that serves Kerr Park and is regulated by the County Health Department. This system is comprised of a single, small capacity groundwater well and is not connected to the City's main water distribution system.

3.2 Future Water Supply

3.2.1 Constraints on Existing Supply

The City's water supply system is currently constrained by the pumping capacity of its active wells. Limited well monitoring data is available at this time, therefore, it is unknown whether the aquifer (i.e., Mehrten Formation confined aquifer) from which the City draws its water supply is being overdrafted. As described later in this plan, it is recommended that the City conduct monthly monitoring of the Mehrten Formation confined aquifers to determine if the aquifer is being overdrafted, and if so, at what rate the overdraft is occurring. City staff began conducting monthly well monitoring in December 2008.

3.2.2 Groundwater Supply

At this time it is unknown whether the City's water supply aquifer is in a state of over draft. For the purposes of this UWMP, it is assumed that adequate groundwater will be available for all future (post-2005) years. This assumption should be revisited and further analyzed in the 2010 UWMP.

The IRWMP recommended the following actions to secure a more complete understanding of the local hydrogeology. The information developed from these actions can be used to identify the specific options the City should pursue to maintain groundwater levels and quality:

Table 6. Potential Groundwater Supply Issues and Recommended Actions

Issue	Recommended Action
Insufficient monitoring along the Stanislaus and Tuolumne Rivers to assess surface water-to-aquifer interactions.	Review Regional Water Quality Control Board records to identify shallow wells that could be used to estimate groundwater gradients near the rivers.
Mehrten Formation confined aquifer recharge areas are poorly defined	Locate significant sand or gravel beds from well logs and project their occurrence to ground surface. Confirm the projections by drilling test holes for sediment types.
The recharge areas and the interaction between the forebay and Mehrten Formation confined aquifers are poorly defined.	Conduct oxygen isotope analysis on selected wells in the forebay and Mehrten Formation wells. Supplement where needed with tritium analysis.

- Groundwater Levels:
  - Participate in a well field management and optimization program to determine how City wells can be operated to maximize production, while minimizing the impact from the other wells.
  - Work with plant managers to minimize impacts during the City's peak water demand period and encourage industrial water conservation.
  - Work cooperatively with other water entities in the basin to promote and implement conjunctive management programs.
  - Work cooperatively with other agencies to identify and develop groundwater recharge projects.
- Groundwater Quality Protection:
  - Construct a sanitary seal on all new wells and work with other groundwater users within the management area to ensure that proper well construction methods are used for all new wells.
  - Abandon wells within the management area in accordance with the Stanislaus County well abandonment ordinance.
  - Regularly monitor wells adjacent to industrial areas to detect potential water quality degradation and, if degradation is detected, consult with the Regional Water Quality Control Board to encourage the implementation of necessary steps to control the migration of poor quality water.

3.2.3 Surface Water Supply

At this time, the City does not currently have any approved plans to pursue surface water supplies.

3.2.4 Recycled Water Supply

The City is in the process of upgrading its wastewater treatment plant to provide tertiary filtration followed by ultra-violet light disinfection. Once in operation, the plant will be

capable of producing treated effluent that meets "*Disinfected Tertiary*" standards as defined by Title 22.

The City intends to continue to use groundwater percolation as its primary means of effluent disposal in the future, which will result in an increase in the amount of recycled water percolated back into the underlying groundwater. At most, the amount of recycled water percolated back into the underlying groundwater will increase from 1,950 to 3,760 AFY based on the 2005 and buildout population projections presented in Table 1.

The City is also considering using a portion of the treated effluent for agricultural irrigation. If implemented, the recycled water would be used to irrigate areas located outside of the City's service area and north of the wastewater treatment plant. Therefore, this use would not offset the City's current or future potable water demands and would result in a reduced volume of recycled water percolating into the underlying groundwater.

3.2.5 Planned Water Projects

The City intends to install a new well (Well No. 10) (see Figure 4 for approximate location) and upgrade its distribution system through the addition of two water storage tanks and a pumping station as described below: Both tanks are anticipated to be in service by late 2010.

- **Greger Street Storage Tank.** The first site on Greger Street is approximately 2.1 acres and is located 1/4-mile west of the railroad tracks. This site will be the home of a new 1.5-MG storage tank, along with a City communication tower. To supplement the distribution, a booster pumping station and standby generator will be installed at the same location.
- **Valley View Storage Tank:** The second facility is located at the north end of Valley View Drive, and has an existing 0.5-MG welded steel storage tank and an older, out-of-service concrete tank located on site. The steel tank is due for rehabilitation and is in need of recoating. To allow for the 0.5-MG tank to be taken out of service, a new 0.25-MG storage tank will be installed to provide continuous operation. Once recoated, the existing 0.5-MG tank will be brought back into service.

At this present time, the City does not have approved plans for any other water supply projects.

3.3 Exchange or Transfer Opportunities

The City does not currently have any approved plans to pursue exchange or transfer opportunities.

3.4 Desalination Water

At the present time, the City does not foresee any opportunities for the use of desalination water, which includes ocean water, brackish ocean water, and brackish groundwater, as long-term supplies.

4.0 Water Use

4.1 Water Demands

Water demand projections provide the basis for sizing and staging future water supply facilities. Water use and production records, combined with projections of population and urban development, provide the basis for estimating future water requirements. This chapter presents a summary of available demographic and water use data, and the resulting projections of future water needs for the City.

4.1.1 Past and Current Water Demand

Records of historical water production were obtained from the City's Public Works Department and Water Master Plan. These data include both maximum day and annual water production. Water production is defined as being the volume of water measured at the source, which includes all water delivered to residential, commercial, industrial, and public authority connections, as well as unaccounted-for water.

4.1.1.1 Annual Water Production

Groundwater production from 1998 through 2005 is presented in Table 5. Total water production in 2005 was approximately 4,930 AF. Nearly all of the residential, commercial, and industrial users are metered. According to the Water Master Plan, the estimated average daily water use is 248 gallons per capita-day (gpcd), which is typical for similar small San Joaquin Valley cities. This rate is not as high as some other unmetered San Joaquin Valley communities that practice water conservation, including the implementation of landscape watering ordinances, typically plan for an average daily usage of approximately 250 gpcd.

4.1.1.2 Maximum Day Demand

Daily demand fluctuates throughout the year, due primarily to seasonal climate changes. Water demands are significantly higher in the summer than the winter. System production facilities must be sized to meet the demand on the maximum day of the year, not just the average. Water systems are sized to meet the greater of (1) the maximum day demands plus fire flow, or (2) peak hour demand.

The maximum daily demands in 2000 and 2001 were 4,096 and 4,831 gpm, respectively, in comparison with the total well production capacity of 15,200 gpm. This maximum daily demand equated to a maximum daily water use of 441 gpcd. The ratio between average and maximum daily water uses provides a maximum day peaking factor that can be used to scale annual demand projections to maximum day levels. The average to the maximum day peaking factor based on 2001 operating values is 1.78. Based on a cursory review of the well production capacity and maximum day demands, it appears that the wells meet the maximum day demand plus fire flow criterion as well.

4.1.1.3 Land Use Water Demand Coefficients

The type of land use within a city influences the water usage. More densely populated residential areas typically have a higher water demand than lower density areas. Open spaces, such as parks or schools, also have less water demand than most industrial areas.

Table 7 summaries the general land use categories described in the General Plan along with their estimated water use coefficients as described in the Water Master Plan. These water use coefficients are used in conjunction with the present and future land use classifications to project water demands.

Table 7. Land Use Water Demand Coefficients

Code	Land Use Designation	Water Use Coefficient (gpm/ac)
AG	Agricultural	0
AGR	Agricultural Residential	0
CBD	Central Business District	1.27
EST	Estate	0
GC	General Commercial	1.27
HDR	High-Density Residential	1.9
IND	Industrial	1.54
LDR	Low-Density Residential	1.36
MDR	Medium-Density Residential	1.36
OFF	Office	1.27
OS	Open Space	0
PARK	Park	1.27
PSP	Public/Semi-Public	1.27
SCH	School	0.72
SFLDR	Single-Family, Low-Density Residential	1.00

4.1.2 Future Water Demands

Future water demand estimates have been developed for the year 2010, for five-year increments thereafter through 2025, and for buildout using the following two approaches:

- **3 Percent Increase:** Constant annual increases of 3 percent in the City's demand, which is equal to the growth rate developed for the General Plan.
- **Projected Development Timelines:** City staff identified timelines for specific development plans within the City's service area and the land use water demand coefficients described in Table 7.

Demands were projected based on actual water use in 2005 for both approaches. These projections are shown in Table 8 and are illustrated in Figure 5. By 2025, the average annual water demands are expected to have increased from current demands by approximately 80

percent; from about 4,930 AFY (average of 4.4 mgd) in 2005 to 8,905 AFY (average of 8.0 mgd) in 2025.

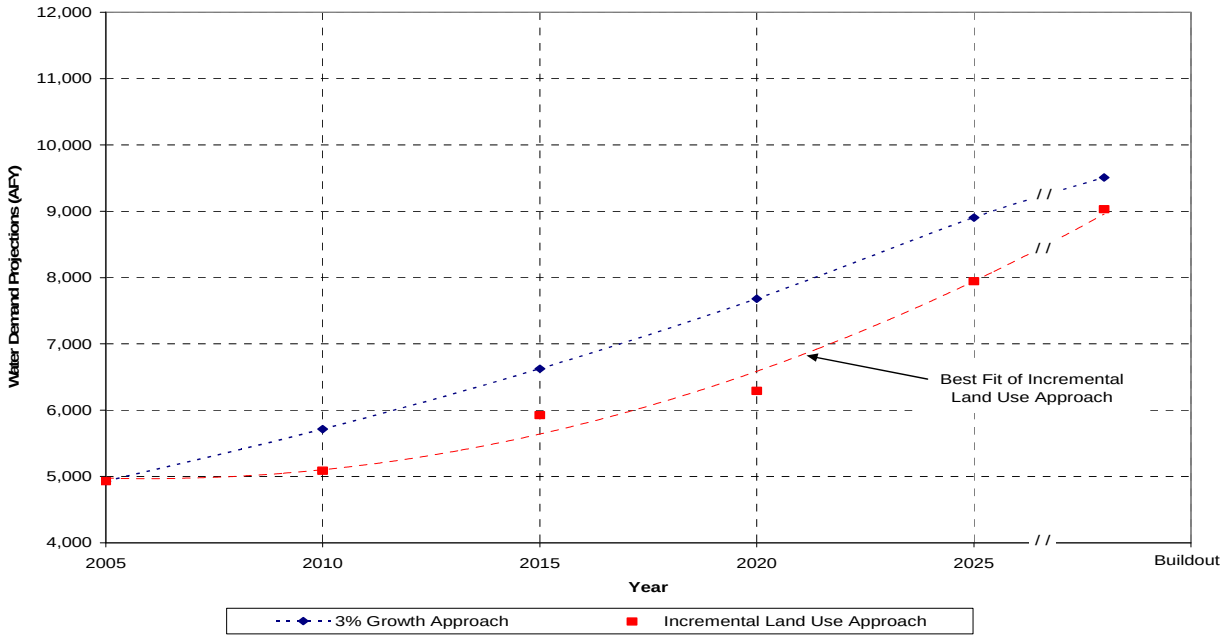


Figure 5. Historic and Projected Water Demands

Table 8. Future Water Use Projections

Projection Timeline	Approach (AFY)		Difference (%)
	3 Percent Growth Rate[1]	Land Use Projections	
2005	4,930	4,930	0
2010	5,715	5,085	2.3
2015	6,625	5,925	2.6
2020	7,680	6,290	2.3
2025	8,905	7,945	8.0
Buildout	9,510	9,030	16.9

[1] These projections will be used as the basis for developing future water supply needs.

The projections in Table 8 represent normal (average) conditions; actual use will vary based on a number of factors, such as season, time of day, etc. For this reason, it can be expected that there will be variations in the City's future water usage. The values predicted in these tables have been used in this UWMP since they are assumed to represent the average conditions of water demand.

4.2 Sales to Other Agencies

At this time, the City does not foresee any opportunities for the sale of groundwater to other agencies. However, the City is considering the delivery of recycled water to the Oakdale Irrigation District if and when the area located immediately north of the City's wastewater treatment plant is developed.

4.3 Other Demands

Not applicable as there are no other future demands anticipated by the City.

5.0 Demand Management Measures (DMM)

The Urban Water Management Planning Act describes two distinct methods for providing information related to Demand Management Measures (DMMs) and meeting the requirements of Water Code Section 10631 (f) and (g). One method is to be a signatory to the Memorandum of Understanding (MOU) regarding Urban Water Conservation in California. The MOU requires the preparation of an annual report that can be used to fulfill the DMM requirements of the UWMP. The other method for a water supplier who is not a member of California Urban Water Conservation Council (CUWCC) and not a signatory of the MOU is to describe their current water conservation programs and demonstrate how they comply with the 14 DMMs specified in Water Code Section 10631.

This UWMP follows the second method, as the City of Oakdale is not a signatory of the MOU and, therefore, is not a member of the CUWCC at this time and does not prepare annual reports for the CUWCC.

The 14 water DMMs described in this section are consistent with those presented in the California Water Code Section 10631 and in the DWR worksheets for completion of an UWMP. The City has prepared the following summaries of its water conservation activities and has included benefit-to-cost (B/C) ratios for each DMM that is not currently being implemented.

Table 9. Summary of Demand Management Measure Implementation

DMM	Description	City Conservation Program	Compliance with UWMP Act
1	Water Survey Programs for Single Family and Multi-Family Residential Customers	Landscape irrigation surveys provided on request	Yes
2	Residential Plumbing Retrofit	None at this time	B/C Ratio = 0.5
3	System Water Audits, Leak Detection and Repair	Water audits to be conducted in the future	In Process
4	Metering with Commodity Rates	Nearly 100% of connections are metered and a tiered rate structure is in place	Yes
5	Large Landscape Conservation Programs and Incentives	No formal program in place; Water Conservation Ordinance applies to large landscapes; City requires submission of landscape and irrigation plans prior to issuance of building permit	B/C = 0.3
6	High Efficiency Washing Machine Rebate Program	Local energy service provider has a rebate program; however the City does not	B/C = 0.9
7	Public Information Programs	City provides periodic bill inserts; program could be expanded if funds become available	In Progress

DMM	Description	City Conservation Program	Compliance with UWMP Act
8	School Education Programs	City does not have a school education program in place, but may develop one if funds become available	In Progress
9	Conservation Programs for Commercial, Industrial and Institutional Accounts	Water Conservation Ordinance applies to all customers; no formalized audit program is in place	Yes
10	Wholesale Agency Programs	Not Applicable	Not Applicable
11	Conservation Pricing	Tiered rate structure in place	Yes
12	Water Conservation Coordinator	Water Conservation Ordinance indicates all employees of the City's water division are responsible for enforcing conservation principles	Yes
13	Water Waste Provisions	Water Conservation Ordinance provides restrictions and penalties for wasted water	Yes
14	Residential Ultra-Low Flush Toilet Replacement Program	None at this time	B/C Ratio = 0.6

5.1 DMM Implementation

5.1.1 DMM1: Water Survey Programs for Single-Family Residential and Multifamily Residential Customers

Water survey programs typically involve residential interior and exterior water use reviews whereby staff assist homeowners in identifying potential leaks and areas for water savings. Interior fixtures are checked and leak tested and irrigation systems are evaluated. Residents are generally provided with recommendations for improvements, plumbing retrofit kits and water conservation literature. Such programs can be labor intensive as they require time to set up appointments with residents, plus the actual survey and follow-up time.

Although the City does not currently have an interior water survey program, they do, upon request, perform landscape irrigation surveys to assist customers in identifying leaks and methods for using less water. The City does not currently maintain data regarding the landscape irrigation surveys, although this may be implemented in the future if budgetary constraints, workload and schedules allow.

The effectiveness of the program can be evaluated by comparing customer-specific historic water usage to the current water usage recorded after the on-site inspection.

5.1.2 DMM 2: Residential Plumbing Retrofit

This water DMM involves enforcement of plumbing fixture efficiency standards and encourages programs to retrofit existing inefficient fixtures with newer reduced flow fixtures.

This retrofit program focuses on plumbing installed prior to 1992, in part due to the passage of the Federal Energy Policy Act of 1992, which restricted all newly manufactured faucets and showerheads to a flow of 2.5 gallons per minute.

The City does not currently have a residential plumbing retrofit ordinance or requirement in effect.

5.1.3 DMM 3: System Water Audits, Leak Detection, and Repair

This DMM focuses on the water distribution system itself, and includes water audits, leak detection, and repair. The first step in a water audit is relatively straightforward, involving comparison of the amount of water produced with the amount of water delivered to customers. The difference is referred to as "unaccounted water," and includes actual losses (leaks) in the distribution system, authorized but unmetered use (e.g., hydrant flushing and fire fighting), unauthorized water use, and meter error.

At this time, when a water leak is reported, the City responds to identify and repair the leak. Additionally, the City has implemented a capital improvement program to replace water lines. The capital improvement program has a variable annual budget allocation to replace water mains. Water mains are identified for replacement based on age, pipe material and known problems.

While the City does not currently conduct formal distribution system water audits, the data required to perform such an audit is readily available. In addition to hydrant flushing and fire fighting, irrigation for the City's parks is also unmetered. Thus, the City could estimate park irrigation demands or install water meters at the connections to improve the accuracy of the audit. The City also works with local cemeteries to monitor water usage.

The City will implement a formal water audit program in 2010.

5.1.4 DMM 4: Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

This water DMM has two parts. The first part includes the metering of all new connections and the meter retrofitting of existing connections. The second includes the development of commodity water rates, which amounts to billing by volume of water usage and not decreasing the water price for increased use.

Installing water meters and billing for actual water use provides a strong incentive for customers to use less water and equalizes service costs for each customer to their actual use (high water users pay a more equitable share of the system costs).

The City's Municipal Code (Oakdale City Code, Chapter 35 Article 1) requires that all water users shall have a meter installed. Approximately 98 percent of the City's connections are

currently metered. Some irrigation connections for the City's parks are not metered but will be in the future.

The City currently meters and bills for actual water used. Customers are billed based on a monthly service charge (based on meter size) and a volume charge, which is based on actual water consumption. The rates for the volume charge are tiered and increase with increasing volume as shown in the following table.

Table 10. Current Water Rate Structure

Volume (cubic feet)	Rate Type	Meter Size						
		5/8 to 1"	1.5"	2"	3"	4"	6"	8"
0 - 1200	Monthly Base Charge	7.00	7.00	8.55	18.00	23.25	31.50	42.00
1201 - 3500	$ per 100 cu.ft.	0.45	0.45	0.45	0.45	0.45	0.45	0.45
3501 - 6700	$ per 100 cu.ft.	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Over 6700	$ per 100 cu.ft.	0.60	0.60	0.60	0.60	0.60	0.60	0.60

The City is currently updating its water rate structure to include multiple customer classes and more severe rate increases with increasing usage to encourage greater water conservation.

5.1.5 DMM 5: Large Landscape Conservation Programs and Incentives

Water demand by large landscape water users can be managed by providing water audits and incentives for water conservation. The first consideration of this measure begins with identifying large irrigators and their water use, followed by the development of a program for regular auditing (at least one every five years) with provisions that include water conservation training and information, with financial incentives.

At this time, large landscape water users within the City are limited to schools and parks where water is used to irrigate playgrounds and turf grass. The City's parks are not currently metered, although this may be implemented in the future if budgetary constraints allow. It is recommended that the City examine the evapotranspiration information available from the California Irrigation Management Information System (CIMIS) in order to determine the water required to efficiently irrigate turf and landscaping areas, and to evaluate the water used by large landscape users.

In addition, the City requires that complete landscape and irrigation plans be submitted and approved prior to the issuance of a building permit. During the plan review process, the City can encourage the utilization of drought tolerant plants to minimize irrigation demands.

5.1.6 DMM6: High-Efficiency Washing Machine Rebate Programs

Typically, a high-efficiency washing machine rebate would offer a $75 to $100 rebate to qualifying customers that install them in their homes.

Pacific Gas and Electric (PG&E) is the energy service provider for the area and is currently offering rebates for high-efficiency clothes washers. The clothes washer rebate is $75 per installation. Applications for these rebates are available on-line. The rebates are distributed on a first come, first serve basis and are in place for the period January 1, 2006, through December 31, 2008, after which time they may be renewed.

At this time, the City does not have a rebate program for high-efficiency washing machines but is considering notifying its customers of the PG&E rebates as a method of increasing the number of water efficient washing machines in the City.

5.1.7 DMM7: Public Information Programs

Current public information for water demand management includes coordination with other agencies and the provision of programs promoting water conservation, speakers for the media or community groups, public service announcements, water conservation bill inserts, and daily water use comparisons on customer's bills.

The City has implemented this water DMM through the periodic inclusion of bill inserts promoting water conservation, as well as flyers describing the City's fines for wasting water.

This program could be enhanced by including water conservation information on a public access channel, participating in local fairs and festivals, preparing news releases and/or advertisements for the local newspaper, and creating a water conservation page on the City's website. These additional measures may be implemented in the future if budgetary and workload constraints allow.

5.1.8 DMM8: School Education Programs

Components of this DMM include provision of education materials, instructional assistance, and classroom presentations.

The City does not have an active school education program but may institute a program over the next five years if budgetary and workload constraints allow.

5.1.9 DMM 9: Conservation Programs for Commercial, Industrial, and Institutional Accounts

The implementation of water conservation for commercial, industrial, and institutional customers includes identifying the largest water users among industrial and commercial customers; offering audits and incentives sufficient to conserve water; and providing follow-up audits as needed.

The City's water conservation program and ordinance applies to all customers. The City's commercial, industrial and institutional water customers are metered and charged for water usage in accordance with their metered use. Furthermore, the City requires the submittal of complete landscaping and irrigation plans prior to the issuance of a building permit. During the

review process, the City can promote the use of drought tolerant plants to minimize irrigation demands.

5.1.10 DMM 10: Wholesale Agency Programs

This DMM is not applicable to the City of Oakdale.

5.1.11 DMM 11: Conservation Pricing

Conservation pricing is often cited as a means to have market mechanisms provide incentives for conservation. This DMM includes, at a minimum, eliminating "non-conserving" pricing and adopting "conserving" pricing. This measure pertains both to water service and sewer service, where the urban water supplier also provides sewer service.

The City currently has a tiered rate structure and is in the process of updating it to reflect current conditions. The new structure will also include a tiered rate structure, promoting water conservation.

5.1.12 Water Conservation Coordinator

This water DMM entails designating a water conservation coordinator responsible for managing water conservation efforts and evaluating the results.

The City's water conservation ordinance authorizes the water supervisor, any maintenance worker assigned to the water division of the City's Public Works Department, and any water conservation officers appointed by the director of public works to investigate water conservation violations and serve notices as defined in the ordinance. Thus, the duties of a water conservation coordinator are spread across the department.

5.1.13 DMM 13: Water Waste Prohibition

The City's existing Water Conservation Ordinance (Oakdale City Code, Chapter 35 Article 6) defines water waste prohibitions for the City's customers. The Ordinance provides several definitions of "waste of water," outlines watering days and hours, describes the City's enforcement procedures, and discusses the processes of violations, infractions and appeals. A copy of the City's Water Conservation Ordinance is included in Appendix C.

5.1.14 Residential Ultra-Low Flush Toilet Replacement Programs

This DMM would require Ultra-Low Flush (ULF) toilets in all new construction. An effective retrofit program can be achieved through voluntary replacement with financial incentives or through mandatory measures, for example, requiring ULF toilet installation at time of property resale or as a permitting requirement for major renovations involving changes in the sanitary sewer lines.

The City does not have a ULF toilet replacement program. The City may implement this DMM in the future if budgetary and workload constraints allow.

5.2 DMM Non-Implementation

Table 11 provides a summary of the DMMs not currently being implemented by the City. The approximate cost per AF listed each DMM represents the total value, in 2008 dollars, of the lifetime water savings estimated for each DMM.

Table 11. Evaluation of Non-Implemented DMMs

Non-implemented & Not scheduled DMM	Per-AF Cost ($)
DMM 2 – Residential Plumbing Retrofit	$2,900
DMM 5 – Large Landscape Conservation Program	$4,900
DMM 6 – High Efficiency Washing Machine Rebates	$1,700
DMM 14 – Residential Ultra-Low Flush Toilet Replacement Programs	$2,600

6.0 Water Shortage Contingency Plan

6.1 Coordination with Other Suppliers

Section 10620 (d)(2) of the California Water Code requires that the City coordinate, to the extent practicable, preparation of its urban water shortage contingency plan with other urban water suppliers and public agencies in the area.

6.2 Action Stages

Section 10632 (a) of the California water code requires that the City develop stages of action to be undertaken in response to a water supply shortage, including up to a 50 percent reduction in water supply. The City must also identify specific water supply conditions which are applicable to each stage.

A four stage rationing plan, including voluntary and mandatory stages, is described below. The stage determination and public declaration during a water supply shortage will be made by the Public Works Director. Notification may be achieved through newspaper, public notice, mailings, and utility billings or by a combination of such means as determined by the Public Works Director. Table 12 summarizes the triggering mechanisms for each water stage.

Table 12. Water Supply Shortage Stages and Conditions

Stage No.	Water Supply Conditions	% Shortage
1	Normal Conditions	Water supply system fully operational, no limitations on production capabilities
2	Water Alert	Production capability reduced by up to 10%
3	Water Warning	Production capability reduced by 10 to 30%
4	Water Emergency	Production capability reduced by 30 to 50%

6.3 Minimum 3-Year Supply

Section 10631 (e)(2) of the California Water Code requires that the City estimate the minimum water supply available at the end of 12, 24, and 36 months, assuming the worst case water supply shortage.

California Water Code section 10632 (b) requires an estimate of the minimum annual water supply availability during each of the next three water years based on the driest three-year historic sequence for the agency's water supply. The City of Oakdale's water supply is currently 100 percent groundwater.

The City's current water supply capacity is 15,200 gpm, or 21.9 mgd, from the City's wells. The annual average well production for the year 2005 was 4.4 mgd. Loss of water supply capacity could occur due to mechanical problems with wells, pumps, motors, etc. Preventative maintenance programs aid in minimizing the occurrence of mechanical failures. In addition, a

water supply capacity loss may be caused by a change in water quality due to well contamination. Worst case water supply projections are not included in this section because distribution system mechanical failures and well contamination events are not expected and the capacity loss associated with each problem is difficult to quantify.

The minimum supply volumes for the next three years, presented in Table 13, are based on pumping the City's active wells at 50 percent capacity over the course of the year. Comparison of these values with projected demands demonstrates that the City has adequate capacity to meet the minimum 3-year supply.

Table 13. Three-Year Estimated Minimum Water Supply - AFY

Source	2008	2009	2010	Normal
Groundwater	10,650	10,650	10,650	10,650

6.4 Catastrophic Supply Interruption Plan

The Water Code section 10632 (c) requires actions to be undertaken by the water supplier to prepare for, and implement during, a catastrophic interruption of water supplies. A catastrophic event that constitutes a proclamation of a water shortage could be any event, either natural or manmade, that causes a severe shortage of water, synonymous with or with greater severity than the Stage 3 or Stage 4 water supply shortage conditions. In response to these possibilities, the City has developed an Emergency Response Plan, which includes appropriate personnel listings, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations. The Emergency Response Plan is on file at the Public Works Department.

6.5 Prohibitions and Penalties

All requirements of the City's Water Conservation Ordinance (refer to Appendix C), Oakdale City Code, Chapter 35 Article 6, shall be in effect for Stage 1, normal conditions. The Water Conversation Ordinance prohibits the waste of water, defined as follows:

1. Failure to comply with the following schedule when watering lawns, plants, or garden, or using outdoor water for other purposes:
    a) No lawn/garden watering or other outdoor use will be allowed between the hours of ten a.m. to seven p.m. every day.
    b) Dwellings or establishments with odd numbered street addresses shall use outdoor water only on Mondays, Wednesdays, Fridays and Sundays.
    c) Dwellings or establishments with even numbered street addresses shall use outdoor water only on Tuesdays, Thursdays, Saturdays and Sundays.

d) Watering lawns or gardens such that excess water leaves the property or area being watered.

e) Watering outdoor landscaping while raining.

f) Washing vehicles, equipment or boats, during restricted days or hours; and/or using hoses without automatic shut-offs

g) Hosing down of concrete or asphalt curbs, gutters, sidewalks, driveways or slabs.

h) Having leaky faucets or plumbing fixtures on the premises.

In addition to the prohibitions listed above, which are always in effect, Table 14 lists the additional consumer actions which are placed into effect as the water shortage escalates.

Table 14. Prohibitions Against Specific Water Use Practices During Water Shortages

Stage When Prohibition Becomes Mandatory	Consumer Actions During Water Shortages
2	No watering of front yards except for trees and shrubs by hand, and vegetation maintained through drip irrigation. Back yard irrigation subject to Stage 1 requirements
3	Restaurants prohibited from serving water except upon request
3	Mandatory retrofit of low flow showerheads in homes when building remodeling occurs
3	No use of outdoor fountains except for maintenance purposes
3	Back yard irrigation is limited to a maximum of two days per week
4	No landscape irrigation shall be permitted
4	Car washing permitted at car wash facilities only
4	Moratorium on all new landscaping
4	No potable water from the City's system shall be used to fill or refill swimming pools or ponds
4	Building moratorium on all new water connections, including new swimming pools

Oakdale City Code, Chapter 35 Article 6, provides the following penalties for violations of the City's Water Conservation Ordinance:

- First and second violation within one year: Notice of Ordinance Violation
- Third violation within one year: $50
- Fourth violation within the year: $75
- Fifth violation within the year: $100
- Any additional violations within the year: $200 each

The Notice of Ordinance Violation shall be served either personally, by mail, or by posting at the residence or business premises of the customer, and shall state the acts or conduct which constitute the wasting of water, and notify the customer of the penalty fees assessed for further violations.

6.6 Revenue Analysis

Section 10632 (g) of the California Water Code requires an analysis of the impacts of each of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier.

The City currently has 6,869 metered connections and only 18 unmetered connections. The City's existing rates (see Table 10) are structured such that a base rate is imposed based upon meter size and includes up to 1,200 cubic feet per month before the first consumptive use tier is implemented. Above 1,200 cubic feet per month, there are three consumptive use tiers with increasing fees billed in increments of 100 cubic feet.

The City's estimated revenue impacts due to decreasing supply and consumer use are presented in Table 15. The average revenue between 2004 and 2007 was on the order of $1.3 million per year.

Table 15. Actions and Conditions that Impact Revenues

Type	Anticipated Annual Revenue Reduction[1]
Stage 1 – No Reduction	$0
Stage 2 - 10% Reduction in Consumption	$90,000
Stage 3 - 30% Reduction in Consumption	$250,000
Stage 4 - 50% Reduction in Consumption	$400,000

[1] Revenue reductions are estimated based upon total number of connections and metered use for the years 2004 through 2007, and assume reduced consumption for the full year.

The estimated revenue impacts presented above are highly conservative, as they are based on the assumption that 100 percent of users would reduce their consumption. However, these impacts are significant, particularly given that only the variable costs of supplying water will be reduced as water usage decreases while the fixed costs remain constant. Variable costs are directly linked to the operation of the City's wells and distribution system, and include costs such as the per unit power charge for pumping. Fixed costs are independent of well operation and include any water supply and distribution system-related debt service, salaries for maintenance and operations personnel, etc.

Since the City is currently undergoing a rate study, it is recommended that the rates be structured such that a reduction in consumption will still yield sufficient revenue to provide for continued long-term operation of the water supply and distribution system.

6.7 Water Shortage Contingency Ordinance and Monitoring Mechanisms

Section 10632 (h) of the California Water Code requires the inclusion of a draft water shortage contingency resolution. In the event of a water shortage emergency, a draft water shortage contingency resolution has been included in Appendix D, which can be passed by the Oakdale City Council. The draft gives the City Council's support to the Public Works Director in taking emergency actions.

Section 10632 (i) of the California Water Code requires the inclusion of a mechanism for determining the actual reductions in water use.

For metered accounts, reductions in water use for each user can be determined based upon meter readings. For unmetered accounts, reductions in water use will be determined by measuring water production at the City's wells. In the event of a water shortage, the City will monitor the production at its wells more frequently. The following table summarizes this information.

Table 16. Water Use Monitoring Mechanisms

Mechanisms for determining actual reductions	Type and quality of data expected
Increased meter reading	Changes in the volumes of water produced at the City's wells and water delivered to individual metered service connections.

7.0 Reliability Assessment

This section provides a description of the potential variability in the City's water supplies caused by water quality and climatic factors, as well as the steps being taken by the City to address these potential concerns.

7.1 Water Quality Impacts on Reliability

Water quality is an important factor in determining supply reliability; if adequate quality cannot be maintained, then the supply may be lost. As previously described, the City draws its water from seven active wells located in the Modesto Groundwater Subbasin. Water pumped from the aquifer meets the standards of Title 22 and is suitable for direct potable use without treatment.

Although the City's existing wells are capable of producing a reliable and high quality source of water, catastrophic events such as earthquakes, major fire emergencies, water outages due to extended losses of power, localized flooding, groundwater contamination, and acts of sabotage could impact the City's ability to maintain high water quality. To prepare for such events, the City prepared an Emergency Response Plan, which is on file in the Public Works Department.

The City has taken steps to address any potential water quality issues that could impact the reliability of its water supply. There are no plans to replace or supplement these sources.

7.2 Water Service Reliability

The section addresses the reliability of the City's water service to its customers during normal, dry and multiple dry water years.

Table 17 compares current and projected water supply and demand for the next 25 years based on the information presented in Chapters 3.0 and 4.0. The City's water supply is based upon the total capacity of its existing wells.

There is not expected to be a reduction in the City's normal water supplies for any condition, normal, dry or multiple dry water years.

As Table 17 indicates, the capacity of the City's current wells is sufficient to meet future demands through 2025. However, additional wells may be desired in the future to minimize localized cones of depression, as well as pump operating time.

Table 17. Supply and Demand Comparison

Year	Water Year Scenario	Demand, AFY	Supply, AFY	Surplus, AFY	Surplus as Percent of Supply	Surplus as Percent of Demand	Supply as Percent of Normal
2005	Normal	4,930	10,650	5,720	54%	116%	100%
	Single Dry	4,930	10,650	5,720	54%	116%	100%
	Multiple Dry Year Period Starting in 2006						
	2006	5,087	10,650	5,563	52%	109%	100%
	2007	5,244	10,650	5,406	51%	103%	100%
	2008	5,401	10,650	5,249	49%	97%	100%
	2009	5,558	10,650	5,092	48%	92%	100%
	2010	5,715	10,650	4,935	46%	86%	100%
2010	Normal	5,715	10,650	4,935	46%	86%	100%
	Single Dry	5,715	10,650	4,935	46%	86%	100%
	Multiple Dry Year Period Starting in 2011						
	2011	5,897	10,650	4,753	45%	81%	100%
	2012	6,079	10,650	4,571	43%	75%	100%
	2013	6,261	10,650	4,389	41%	70%	100%
	2014	6,443	10,650	4,207	40%	65%	100%
	2015	6,625	10,650	4,025	38%	61%	100%
2015	Normal	6,625	10,650	4,025	38%	61%	100%
	Single Dry	6,625	10,650	4,025	38%	61%	100%
	Multiple Dry Year Period Starting in 2016						
	2016	6,836	10,650	3,814	36%	56%	100%
	2017	7,047	10,650	3,603	34%	51%	100%
	2018	7,258	10,650	3,392	32%	47%	100%
	2019	7,469	10,650	3,181	30%	43%	100%
	2020	7,680	10,650	2,970	28%	39%	100%
2020	Normal	7,680	10,650	2,970	28%	39%	100%
	Single Dry	7,680	10,650	2,970	28%	39%	100%
	Multiple Dry Year Period Starting in 2021						
	2021	7,925	10,650	2,725	26%	34%	100%
	2022	8,170	10,650	2,480	23%	30%	100%
	2023	8,415	10,650	2,235	21%	27%	100%
	2024	8,660	10,650	1,990	19%	23%	100%
	2025	8,905	10,650	1,745	16%	20%	100%

8.0 Adoption and Implementation of UWMP

8.1 Provision of Water Supply Reliability Section to Service Area Customers

The City of Oakdale does not supply water to cities or agencies other than its own customers. Therefore, the UWMP will not be distributed to other agencies except as described in Chapter 1.0.

8.2 Public Participation and Plan Adoption

The adoption resolution for the UWMP is found in Appendix B. The Draft UWMP was made available for public review between November 26, 2008, and December 29, 2008. Notices were placed on the City's website to encourage involvement from all social, cultural and economic groups. A public hearing was conducted for the Draft UWMP to allow public review and comment. Proof of the public hearing is presented in Appendix B. There were no public comments at the public meeting.

8.3 Provision of 2005 UWMP to Local Government

Water Code Section 10644 requires that the City provide a copy of this UWMP to all cities and counties within which the City provides water. Therefore, this UWMP will be sent to Stanislaus County as described in Section 1.4.

8.4 Public Review

This document was made available for public review as described in Section 1.5.

9.0 References

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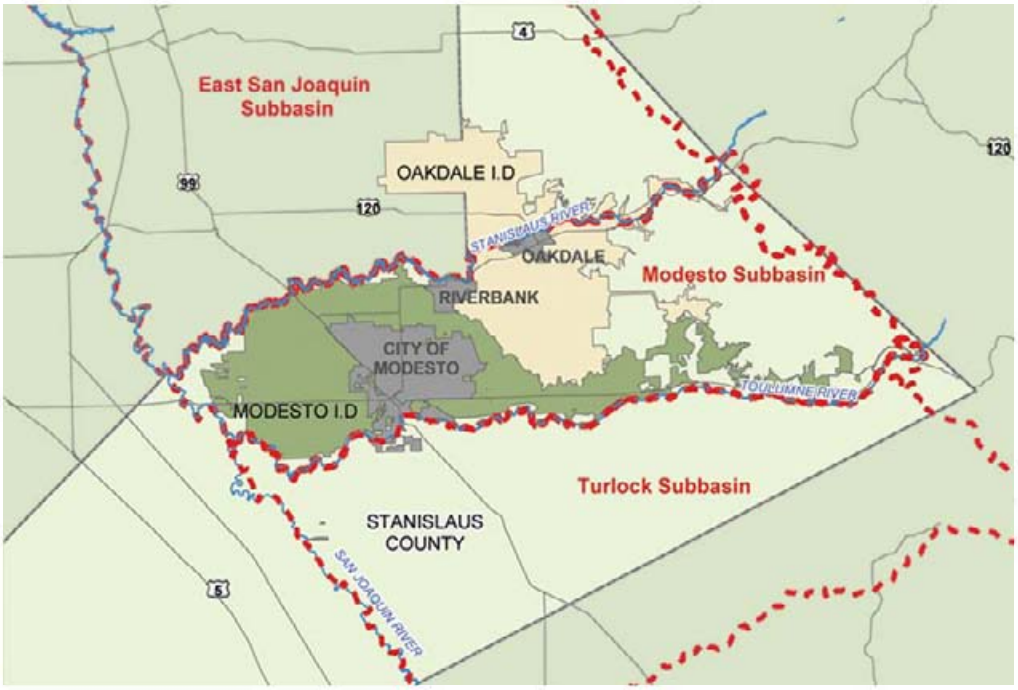
Appendix A
Modesto Regional Groundwater Management Plan

FINAL DRAFT

Integrated Regional Groundwater Management Plan

for the Modesto Subbasin

Stanislaus and Tuolumne Rivers Groundwater Basin Association



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Abbreviations and Acronyms

AB 3030	Groundwater Management Act
Association	Stanislaus and Tuolumne Rivers Groundwater Basin Association
B-E/GEI	Bookman-Edmonston, a Division of GEI Consultants
bgs	below ground surface
BMOs	Basin Management Objectives
CVRWQCB	Central Valley Regional Water Quality Control Board
DBCP	dibromochloropropane
DEH	San Joaquin County Department of Environmental Health
DER	Stanislaus County Department of Environmental Resources
DWR	Department of Water Resources
DWSAP Program	Drinking Water Source Assessment and Protection Program
EC	electrical conductivity
EDP	ethylene dibromide
gpd/ft	gallons per day per foot
gpm	gallons per minute
IRGMP	Integrated Regional Groundwater Management Plan
MCL	maximum contaminant level
mg/l	milligrams per liter
mgd	million gallons per day
MID	Modesto Irrigation District
MRWTP	Modesto Regional Water Treatment Plant
OID	Oakdale Irrigation District
PBE	Physical Barrier Effectiveness
PCAs	Potential Contaminating Activities
PCE	perchloroethylene
SB 1938	Groundwater Management Planning Act of 2002

SB 1672	Integrated Regional Water Management Planning Act of 2002
SSJID	South San Joaquin Irrigation District
TCE	trichloroethylene
TDS	total dissolved solids
TID	Turlock Irrigation District
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
WHPA	Wellhead Protection Area
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter

1 Introduction

1.1 Introduction

In April 1994, six agencies covering the Modesto Groundwater Subbasin formed the Stanislaus and Tuolumne Rivers Groundwater Basin Association (Association) to provide a forum for coordinated planning and management of the subbasin. These six agencies are:

- The City of Modesto
- The Modesto Irrigation District (MID)
- The City of Oakdale
- The Oakdale Irrigation District (OID)
- The City of Riverbank
- Stanislaus County

Since 1994, the Association has been actively engaged in management of the subbasin. In late 2003, the Association began developing an integrated regional groundwater management plan in compliance with the Groundwater Management Planning Act of 2002 (SB 1938) and the Integrated Regional Water Management Planning Act of 2002 (SB 1672). The Association selected Bookman-Edmonston, a Division of GEI Consultants (B-E/GEI), to assist in the preparation of this plan.

The six agencies rely on groundwater for some or all of their service area water needs. These agencies share the groundwater resource and, through the Association, provide coordinated planning to make the best use of groundwater to the mutual interests of the inhabitants. Throughout the planning process, other interested parties within the subbasin were encouraged to participate in the development of the plan. The Association coordinates its planning process with other neighboring water agencies as well as state agencies.

1.2 Integrated Regional Water Management Plan Subareas

The planning area includes the entire Modesto Groundwater Subbasin and part of the Eastern San Joaquin Groundwater Subbasin and includes all or most of the service areas of the six agencies constituting the Association.

The Modesto Groundwater Subbasin underlies all of MID, the City of Oakdale, and the City of Riverbank. However, a portion of OID overlies the Eastern San Joaquin Groundwater

Subbasin, and a portion of the City of Modesto service area overlies the Turlock Groundwater Subbasin. The entire subbasin and planning area is within Stanislaus County.

OID's jurisdictional boundaries reach beyond the boundaries of the Modesto Groundwater Subbasin, and the study area has been extended to include OID's complete jurisdiction. However, this management plan is simply called the Integrated Resources Groundwater Management Plan (IRGMP) for the Modesto Subbasin. A similar water planning effort is under way in the Turlock Groundwater Subbasin. The portion of the City of Modesto service area within the Turlock Subbasin is covered in the Turlock groundwater planning process. A map of the study area and agencies involved are shown in Figure 1-1.

1.3 Stanislaus and Tuolumne Rivers Groundwater Basin Association

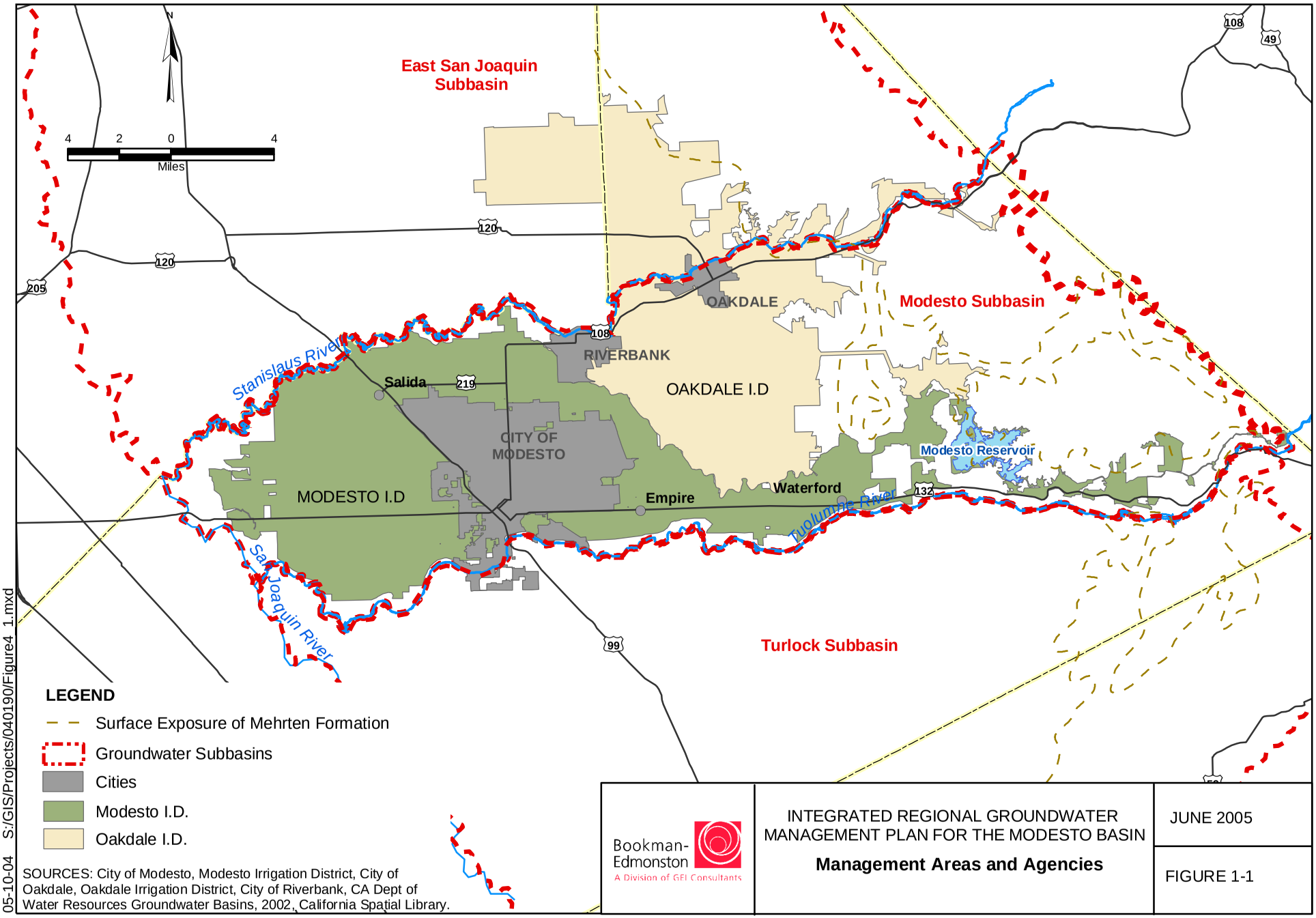
This IRGMP is a product of the efforts of the six cooperating agencies noted above that formed the Association through a memorandum of understanding signed in April 1994. The Association was created to provide a forum in which the parties could work cooperatively to combine the available talent and resources of the parties' respective organizations, to provide coordinated planning to make the best use of available water resources of the subbasin to meet the needs of the parties, and to accomplish the Association's stated purposes. A copy of the memorandum of understanding is presented in Appendix A. The purposes of the Association are:

- To determine and evaluate the subbasin's groundwater supply
- To promote coordination of groundwater management planning activities, including the preparation of the groundwater management plan
- To develop a hydrologic groundwater model of the groundwater basin
- To determine the subbasin's need for additional or improved water extraction, storage, delivery, conservation, and recharge facilities
- To provide information and guidance for the management, preservation, protection, and enhancement of groundwater quality and quantity in the subbasin

1.4 Accomplishments of the Stanislaus and Tuolumne Rivers Groundwater Basin Association

Since its inception, the Association has successfully provided for:

- Better understanding of the groundwater basin, its aquifers, geology, water quality, water level fluctuations, and potential sources and mitigation of contaminants.


East San Joaquin Subbasin
Modesto Subbasin
Turlock Subbasin
OAKDALE
RIVERBANK
Salida
OAKDALE I.D
CITY OF MODESTO
MODESTO I.D
Empire
Waterford
Modesto Reservoir
Stanislaus River
San Joaquin River
Tuolumne River
4 2 0 4
Miles
N
120
205
108
49
219
99
132
LEGEND
Surface Exposure of Mehrten Formation
Groundwater Subbasins
Cities
Modesto I.D.
Oakdale I.D.
SOURCES: City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002., California Spatial Library.
Bookman-Edmonston
A Division of GEI Consultants
INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN
Management Areas and Agencies
JUNE 2005
FIGURE 1-1
05-10-04 S:/GIS/Projects/040190/Figure4_1.mxd

- Cooperative working relationship among all agencies, combining their financial strength, and sharing of resources to better managing their groundwater.

- A forum for coordinated and uniform data collection, and water management activities.

- Regular meeting of the member agencies to share and learn from each other's experiences to discuss water management issues, and to assist one another to resolve those issues.

Some of the Association's specific accomplishments include:

- Six public agencies voluntarily working together under the umbrella of a locally controlled and managed groundwater association. The working relationship is defined by the Memorandum of Understanding Relating to the Formation and Operation of the Stanislaus and Tuolumne Rivers Groundwater Basin Association. Meetings of the Association are held at 2 p.m. on the first Thursday of every month in the MID offices, located at 1231 11th Street, Modesto, California. These meetings are open to the public.

- Development of a coordinated groundwater data collection and monitoring program, the extension of groundwater monitoring to selected privately owned wells to provide a more comprehensive view of groundwater elevations throughout the subbasin, and collecting spring and fall water levels throughout the Modesto Subbasin from all participating agencies' groundwater well networks.

- Developing a basin-wide integrated regional groundwater management plan consistent with SB 1938. The updated plan is scheduled for individual public agency adoption in early 2005.

- Formation of the Regional Water Management Planning Group consistent with SB 1672 (Costa).

- Entered into an agreement with the California Department of Water Resources through a Memorandum of Understanding to Work Cooperatively Together to Improve Surface Water and Groundwater Management and to Promote Conjunctive Use Projects and Programs in the Modesto Groundwater Subbasin (Appendix B).

- The Association provides local share funding for the multi-year, multi-phased study sponsored by the U.S. Geological Survey (USGS) (*Modesto Groundwater Basin Characterization*, November 2004). The study is entering its third phase. *Scientific Investigations Report 2004-5232*, published by the USGS in November 2004, summarizes the findings and recommendations from Phase One.

- The Association provided information and other input into the triennial report, *Recommendations for Improving Groundwater in Stanislaus County*.

- Implementation of an agreement between two members of the Association, MID and the City of Modesto, for the delivery of surface water to the City to reduce groundwater pumping, hence reducing localized overdraft and contaminant migration in the subbasin.

- Development of a wellfield optimization project.

1.5 Groundwater Management Subareas

For the purpose of developing this groundwater management plan, the study area has been divided into six management subareas representing the jurisdictional boundaries of the Association's member agencies. The groundwater management subareas are:

- The City of Modesto management subarea. This area includes the communities of Empire, Del Rio, and Salida and the service area of the City of Modesto that is north of the Tuolumne River. However, the City's service area south of the Tuolumne River in the Turlock Groundwater Subbasin is covered under a separate groundwater management plan being developed for the Turlock Subbasin.

- The Modesto Irrigation District management subarea. This area includes MID's service area and is entirely located within the Modesto Groundwater Subbasin.

- The City of Oakdale management subarea. This area includes the service area of the City of Oakdale and is located entirely within the Modesto Groundwater Subbasin.

- The Oakdale Irrigation District management subarea. This area covers OID's entire service area. About 60 percent of the OID service area is located within the Modesto Groundwater Subbasin and 40 percent is in the Eastern San Joaquin Groundwater Subbasin.

- The City of Riverbank management subarea. This area covers the service area of the City of Riverbank and is entirely within the Modesto Groundwater Subbasin.

- The Stanislaus County management subarea. This area includes the entire study area within the Modesto Groundwater Subbasin and that part of Stanislaus County in the Eastern San Joaquin Groundwater Subbasin that is not covered by the five management subareas listed above.

Figure 1-1 shows the six management subareas as described above.

1.6 Ongoing Groundwater Management-Related Activities

With the exception of some localized areas, groundwater levels are generally stable in the Modesto Groundwater Subbasin and OID service area in the Eastern San Joaquin Groundwater Subbasin. However, increased urban development and changes in irrigation management practices threaten the balance by increasing demand for groundwater and by reducing recharge. It is the objective of the participating agencies to ensure that overall groundwater levels are maintained to provide a reliable long-term source of water.

To manage the basin's groundwater resources, the Association member agencies regularly exchange information and arrange for uniform groundwater data collection and monitoring to better understand the groundwater basin. In 1998, the Association developed a data collection protocol to standardize the data collection procedures among the member agencies. Data is collected in a coordinated fashion biannually. A copy of the current data collection protocol is provided in Appendix C.

Conjunctive use management, in-lieu recharge through the local use of surface water for municipal and industrial purposes, and the protection of groundwater quality and water levels are actions that have been discussed for the long-term beneficial use of the basin. To that extent, MID and the City of Modesto developed and executed a treatment and delivery agreement under which MID supplies treated surface water to the City of Modesto, which uses it to augment is drinking water supply.

Another avenue for helping to maintain groundwater levels is urban water conservation and the installation of water meters. Implementation of the best management practices, including the installation of water meters, can reduce water consumption, improve the overall water supply reliability, and reduce stress on the groundwater system.

A detailed discussion of the water conservation is presented in the various agencies' urban water management plans.

In addition to maintaining groundwater levels, protecting groundwater quality is an important objective for the Association's member agencies. Actions that are being implemented or considered to achieve this objective include conducting a geological assessment to identify areas of poor water quality; controlling water table elevations to contain poor quality water; sealing and abandoning wells to eliminate pathways for contamination; and protecting natural recharge areas from exposure to pollutants.

Land surface subsidence in the basin is not significant. The potential for future land subsidence appears to be remote.

2 Need for Groundwater Management Planning

Groundwater is a precious resource. It is a reliable water source for the agricultural, urban, and industrial needs of the Modesto Subbasin. Increases in population and corresponding increases in groundwater use have resulted in a lower groundwater table in some areas of the Modesto Subbasin and may have contributed to groundwater degradation, especially within the boundaries of the City of Modesto. The water agencies in the subbasin agreed to reevaluate their groundwater management practices and examine opportunities for integration of their surface and groundwater resources. The agencies formed the Association and signed a memorandum of understanding to work cooperatively to resolve their water issues and manage the basin. The signatories also agreed to be involved and cooperate in the development of a groundwater management plan. They have agreed to build upon their recent achievements and prepare a regional and integrated water management plan. Therefore, this IRGMP is being developed as an integrated and regional plan in compliance with SB 1938 and SB 1672.

2.1 Legislative Requirements

SB 1938, as passed by California Legislature and signed into law by the Governor in 2002, amended the Water Code section 10750 *et seq.* to require that new groundwater management plans prepared under the Groundwater Management Act (AB 3030) include the components listed below:

- Documentation that a written statement was provided to the public describing the manner in which interested parties might participate in developing the groundwater management plan. This may include appointment of a technical advisory committee of the stakeholders in the basin.
- Development of Basin Management Objectives (BMOs).
- Adoption of monitoring protocols or a monitoring program capable of tracking changes in conditions for the purpose of meeting BMOs.
- Preparation of a map showing the area of the groundwater basin, as defined by the Department of Water Resources' (DWR) Bulletin 118, with the area of the local agencies subject to the plan as well as the boundaries of other agencies that overlie the basin in which the agency is developing a groundwater management plan.
- A description of the components relating to the monitoring and management of groundwater levels, groundwater quality, inelastic land surface subsidence, and

changes in surface flow and surface water quality that directly affect groundwater levels or groundwater quality.

- Preparation of a plan of actions by the managing entity to involve other agencies and that enables the local agencies to work cooperatively with other public entities whose area or boundaries overlie the groundwater basin.
- The Groundwater Management Plan must be adopted by the local managing agency.
- Provisions for periodic reporting of the groundwater management activities and groundwater basin conditions.

In 2002, SB 1672 was also passed by the legislature and signed into law. This law authorizes a regional water management group, as defined, to prepare and adopt a regional plan relating to water supply, water quality, flood protection, or related matters. This law defined procedures to form a regional water management group, to communicate to the public, and to prepare and adopt an integrated regional water management plan.

2.2 IRGMP Components

This plan has been prepared in accordance with requirements of SB 1672 and SB 1938. As such, the plan includes components of AB 3030 and SB 1938 (California Water Code Section 10750 *et seq.*) and SB 1672 (California Water Code Section 10540 *et seq.*). Table 2-1 lists the sections in which each component is addressed. Appendix D is the Groundwater Monitoring Plan (October 2004).

2.3 Purpose and Goals of the Groundwater Management Plan

The purpose of this IRGMP is to provide a framework for coordinating groundwater and surface water management activities into a cohesive set of management objectives and implementing the actions necessary to meet those objectives.

The goal of the IRGMP is to provide for the integrated use of groundwater and surface water within the basin to ensure the reliability of a long-term water supply to meet current and future beneficial uses including agricultural, industrial, and municipal water requirements while protecting the environment.

2.3.1 Water Management Strategies

The regional management actions, described later in this plan, reflect a comprehensive approach to managing water resources in the Modesto Groundwater Basin. In particular, these actions support the following water management strategies:

Table 2-1
Location of Association Groundwater Management Plan Components

A. CWC § 10750 *et seq* ., Required Components (SB 1938)			
	1.	Documentation of public involvement statement.	2.1, Section 7
	2.	Basin Management Objectives (BMOs).	5.4
	3.	Monitoring and management of groundwater elevations, groundwater quality, inelastic land surface subsidence, and changes in surface water flows and quality that directly affects groundwater levels or quality or are caused by pumping.	5.6, 5.7, 8.2, Appendix A
	4.	Plan to involve other agencies located within groundwater basin.	1.2, 1.3, 2.3
	5.	Adoption of monitoring protocols by basin stakeholders.	5.7, Appendix D
	6.	Map of groundwater basin showing area of agency subject to GMP, other local agency boundaries, and groundwater basin boundary as defined in DWR Bulletin 118.	1.2, 5.3
	7.	For agencies not overlying groundwater basins, preparation of GMP using appropriate geologic and hydrogeologic principles.	NA
B. DWR's Suggested Components			
	1.	Management with guidance of advisory committee.	7.3
	2.	Description of area to be managed under GMP.	1.2, 5.3
	3.	Creation of link between BMOs and goals and actions of BMP.	Section 6, 8.2
	4.	Description of GMP monitoring program.	5.7, Appendix D
	5.	Description of integrated water management planning efforts.	2.3
	6.	Report on implementation of GMP.	Section 8
	7.	Periodical evaluations of GMP.	8.5
C. CWC § 10750 *et seq* ., Voluntary Components (AB 3030)			
	1.	Control of saline water intrusion.	2.5, 6.8
	2.	Identification and management of wellhead protection areas and recharge areas.	2.5, 6.1
	3.	Regulation of the migration of contaminated groundwater.	2.5, 6.2
	4.	Administration of well abandonment and well destruction program.	2.5, 6.4
	5.	Mitigation of conditions of overdraft.	2.5, 6.5
	6.	Replenishment of groundwater extracted by water producers.	2.5, 6.6
	7.	Monitoring of groundwater levels and storage.	2.5, 5.7, Appendix D
	8.	Facilitating of conjunctive use operations.	2.5, 6.7
	9.	Identification of well construction policies.	2.5, 6.3
	10.	Construction and operation by local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.	2.5, 6.7
	11.	Development of relationships with state and federal regulatory agencies.	2.5, 8.1
	12.	Review of land use plans and coordination with land use planning agencies to assess activities that create reasonable risk of groundwater contamination.	2.5, 3.4
D. Integrated Regional Planning (SB 1672)			
	1.	Integration of water resource managemen activities.	1.2, 5.2, 8.3, 8.6, 8.7
	2.	Regional planning and management.	1.2, 5.2, 8.3, 8.6, 8.7,
	3.	Formation of a regional management group	Section 7
	4.	Public involvement.	2.1, Section 7
	5.	Development of local, regional, and statewide priorities.	8.2, 8.7

- Increase local and regional water supply reliability and water use efficiency
- Promote groundwater recharge and management
- Support water conservation
- Implement watershed management programs
- Promote water recycling
- Foster conjunctive use
- Improve water quality
- Improve storm water capture and management

Other regional water management elements, such as providing for recreation and river restoration, are addressed in other planning documents prepared by the participating agencies.

2.4 Authority to Prepare Integrated Regional Groundwater Management Plan

The governing bodies of the Modesto and Oakdale Irrigation Districts and the Cities of Modesto, Oakdale, and Riverbank have elected, through the issuance of resolutions, to prepare this IRGMP to effectively manage the surface and groundwater resources of the basin. The specific authority of each agency is as follows:

- MID was formed on July 23, 1887, under the California Irrigation District Act (Wright Act) and is authorized to manage surface and groundwater resources for the benefits of the District landowners.
- OID was organized under the Wright Act on November 1, 1909, to manage its water resources, including surface water and groundwater supplies.
- The Cities of Modesto, Oakdale, and Riverbank are incorporated and authorized to provide for management and distribution of drinking water to their citizens.
- The County of Stanislaus is a water purveyor for a small public water system in the Modesto subbasin. It is a member of the Association and a member of the technical advisory committee to assist in and guide the preparation of the IRGMP. The County may choose, under SB 1672 and as a member of regional management group, to adopt the IRGMP after it is prepared.

3 Water Resources Setting

3.1 Land and Water Uses Within the Study Area

The Modesto Groundwater Subbasin lies between the Stanislaus River to the north and the Tuolumne River to the south and between the San Joaquin River on the west and crystalline basement rock of the Sierra Nevada foothills on the east. The surface area of the subbasin is 247,000 acres.

The northern, western, and southern boundaries are shared with the Eastern San Joaquin Groundwater, Delta-Mendota, and Turlock Groundwater Subbasins, respectively. The major water purveyors in the planning area include MID, OID, and the Cities of Modesto, Riverbank, and Oakdale. The southern 60 percent of OID is in the Modesto Groundwater Subbasin and 40 percent is in the Eastern San Joaquin Groundwater Subbasin. Modesto is in the southwestern portion of the subbasin, and a portion of the city is located south of the Tuolumne River in the Turlock Groundwater Subbasin. Oakdale and Riverbank lie in the north-central portion. Developed land uses within the Modesto Groundwater Subbasin are concentrated in two major categories, irrigated agricultural and urban land uses. The largest jurisdiction within the subbasin is MID, with a service area of 101,700 acres and an irrigated area of approximately 62,000 acres. Nested within MID is the city of Modesto and the communities of Waterford, Empire, Salida, and parts of Del Rio and Riverbank. Modesto alone occupies approximately 40 square miles or 25,600 acres.

OID has a total service area of approximately 72,000 acres, of which approximately 43,200 acres lie within the Modesto Groundwater Subbasin and the remaining 28,800 acres are within the Eastern San Joaquin Groundwater Subbasin. Nested within OID is the city of Oakdale, which covers approximately 2,000 acres and has not been detached from OID, and the city of Riverbank, which covers around 1,760 acres, much of which has been detached. The eastern portion of the subbasin is foothill lands that are primarily rangeland and undeveloped.

3.2 Major Water Purveyors in the Basin

3.2.1 City of Modesto

3.2.1.1 Background

The City of Modesto was first incorporated in 1877 and operates as a Charter City. It was originally to be named Ralston after the prominent San Francisco banker, William Ralston. However, when he declined the honor, the name of Modesto was selected. Since its founding, Modesto has grown to a city of over 200,000 people in 2004.

The City of Modesto has provided potable water service to its urban area since 1985 through the purchase and acquisition of several private water companies. The sole source of water supply until 1995 was groundwater from the Modesto and Turlock Groundwater Basins. Groundwater levels declined from 1924 through 1994 in the downtown area due to increasing urban uses.

In the early 1990s, the City, MID and the Del Este Water Company formed a partnership and signed a treatment and delivery agreement to utilize MID's surface water rights for municipal purposes. The Modesto Domestic Water Project and completion of the Modesto Regional Water Treatment Plant (MRWTP) were the result of this partnership. The project consists of a 30-million-gallon-per-day (mgd) surface water treatment plant and storage and delivery facilities, which were completed in January 1995. Its implementation has allowed the City of Modesto to reduce its groundwater pumping, which has led to a recovery in groundwater levels.

In the mid-1990s, the City of Modesto acquired the Del Este Water Company, which had previously served approximately 30 percent of the municipal customers in the Modesto area. As a result, the City became the retail water purveyor to the communities of Waterford, Hickman, Del Rio, Salida, Grayson, and parts of Ceres and Turlock, in addition to county islands within Modesto. The Modesto Domestic Water Project provides water to municipal customers served by the City of Modesto north of the Tuolumne River, which is the overlapping service area of both the City and MID.

3.2.1.2 Location

Modesto covers approximately 36 square miles in Stanislaus County (see Figure 1-1). The portion of the city north of the Tuolumne River encompasses 34 square miles (94 percent of the service area) and lies within the Modesto Groundwater Subbasin. The portion of the city south of the Tuolumne River encompasses 2 square miles (6 percent of the service area) and lies within the Turlock Groundwater Subbasin.

3.2.1.3 Water Supply

Sources of the City's water within the Modesto Groundwater Subbasin include groundwater from the Modesto Groundwater Subbasin and treated surface water from MID. The City of Modesto supplies approximately 60 percent of its water from City-owned and operated wells. Prior to the completion of the MRWTP, the City of Modesto and the surrounding communities relied solely on groundwater for their domestic supply. The MRWTP EIR noted that groundwater levels were declining, particularly near the center of Modesto, and that with declining water levels, water quality degradation had been observed.

3.2.1.4 Facilities

The City's water system includes over 70,000 water connections, 927 miles of water lines system, 118 water wells, and seven water tanks. Of these wells, 108 withdraw water from the Modesto Groundwater Subbasin. The City does not conduct land use planning in the areas it serves that were formerly within the Del Este system outside the City's Sphere of Influence.

Table 3-1 shows groundwater production by the City of Modesto from 1999 through 2003. Average groundwater use from the Modesto Groundwater management subarea during this period was 45,300 acre-feet per year, which, when combined with 33,600 acre-feet of surface water available from the MRWTP, results in a total supply to the joint MID-City of Modesto service area of 78,900 acre-feet. Assuming that the MRWTP's capacity is increased from 30 mgd to 60 mgd, the available normal year water supply for the joint service area would increase to about 112,000 acre-feet in 2008. During supply shortage years, the delivery of treated surface water by MID may be reduced in equal proportions with deliveries to its agricultural customers. The City, however, has the option of receiving its full contract surface water and making up these shortages by delivering groundwater for an amount equal to shortages to the irrigation canal system. The City presently operates 108 drinking water wells in the Modesto Groundwater Subbasin, including the former Del Este wells.

Table 3-1
Groundwater Production by the City of Modesto

Year	Acre-Feet
1999	45,140
2000	42,100
2001	44,900
2002	47,700
2003	46,780
Average	45,300

3.2.1.5 Ongoing Activities

The City of Modesto's partnership with MID to provide domestic water is an important conjunctive use effort. Other ongoing groundwater management activities by the City of Modesto include the following:

- Active participation in the Association to manage the basin's groundwater resources
- Conjunctive use of groundwater and surface water supplies
- Utilize a SCADA system for the remote operation and monitoring of wells
- Test water quality in accordance with Title 22
- Enacted a well ordinance adopting the California Wells Standards (Bulletin 74-81) and all supplements
- Implementing provisions of the certified Urban Water Management Plan

- Regulation of wastewater disposal

The City received a grant for a feasibility study for the Regional Water Recycling Project. This study investigated the feasibility of collecting the wastewater effluent from a number of cities, including Oakdale and Riverbank. The wastewater from the advanced wastewater treatment plant could be available to the City for non-potable reuse (i.e., crops and landscape irrigation) or water exchanges with other water agencies within the basin.

The City of Modesto Stormwater Program was established in 1993 to meet the objective of effectively eliminating illicit discharges to the storm drain system, reducing the discharge of pollutants from the system, and protecting the groundwater and surface water resources. To meet these objectives, the City prepared a Stormwater Management Plan that has served as the road map for the implementation of the City's storm water program. The plan consists of seven program elements to control the discharge of pollutants and a monitoring program to characterize storm water discharges and assess the health of the receiving waters.

The City currently irrigates approximately 3,000 acres of fodder and feed crops on City-owned land.

3.2.1.6 Issues of Concern

Declining water quality, combined with increasingly strict standards from state and federal regulatory agencies, have forced the City to take an average of 2.3 wells out of service each year (West Yost 2004). The City closely monitors groundwater quality and those wells showing high nitrates have remained out of service. The City employs some well-head treatment and uses granular activated carbon to remove organics and chlorination to disinfect the distribution system. The City has also identified four wells that will not currently meet the federal and state arsenic limits of 10 milligrams per liter without treatment (West Yost 2004). Ongoing USGS investigations have also identified uranium as a constituent of concern.

Future groundwater production may be limited by water quality issues and the cost and availability of well-head treatment technologies. In addition to arsenic, primary constituents of concern in groundwater are dissolved solids, hardness, major ions (probably iron and manganese), organics, radionuclides, and nitrates.

The City's general plan projects that its population will grow from a current population of approximately 206,200 to approximately 400,000 by build-out of the general plan area. With a limited groundwater supply and groundwater quality issues, meeting the City's future needs will be challenging and may require the identification of additional surface water supplies and the implementation of water management options, such as water conservation, recycling, and conjunctive use.

3.2.2 Modesto Irrigation District

3.2.2.1 Background

MID is a public utility that supplies surface water, groundwater, and electrical service to agricultural and municipal customers throughout its 101,700-acre service area. MID was formed on July 23, 1887, the second irrigation district to be established under the California Irrigation Districts Act (Wright Act). During its early years, MID developed numerous rights for Tuolumne River water and facilities to irrigate agricultural lands and to generate electricity using this water.

The primary economy within the district is agriculture or agriculture-related businesses. The primary crops grown within MID are trees (mostly almonds), vines, grain, row crops, and pasture. The average farm size is approximately 20 acres, and approximately 3,000 farms lie within the district. Currently, MID serves approximately 3,000 irrigation water customers and 62,000 irrigated acres.

3.2.2.2 Location

MID is located in eastern Stanislaus County and is bounded on the north by the Stanislaus River, on the south by the Tuolumne River, on the west by the San Joaquin River, and on the east by the Sierra Nevada Mountains (Figure 1-1). The district is located entirely within the Modesto Groundwater Subbasin.

3.2.2.3 Water Supply and Storage Facilities

MID obtains its surface irrigation water from the Tuolumne River. The river's 1,880-square-mile watershed extends to the High Sierra and most of the river's flow comes from snowmelt. Peak flows occur between April and July, when over 60 percent of the annual flow occurs. Annual Tuolumne River runoff average over 1,800,000 acre-feet, varying from a low of 383,000 acre-feet in 1977 to a high of 4,631,000 acre-feet in 1983.

MID's first project as a public entity was the La Grange Dam, completed on December 13, 1893, in conjunction with Turlock Irrigation District (TID). Nearly ten years later, on June 27, 1903, the main canal was completed and farmers along this canal began receiving water. By September of that year, other fields were being served by lateral canals.

Storage and the regulation of main canal deliveries began in 1911 with the completion of the 28,000 acre-foot Dallas-Warner Reservoir (now known as Modesto Reservoir). Carryover storage to protect permanent crops from extended drought was unavailable until the completion of Don Pedro Reservoir in 1923. This reservoir allowed MID to store a maximum of 102,000 acre-feet each year and to begin generating electricity from a power plant developed to help defray the cost of irrigation facilities. In 1970, MID and TID enlarged their storage and power generation capacity with the completion of New Don Pedro

Dam and Reservoir, with a storage volume of 2,030,000 acre-feet. New Don Pedro Reservoir is owned, operated, and maintained jointly by MID and TID.

3.2.2.4 Water Distribution Facilities

MID distributes a combination of Tuolumne River water and groundwater via a network of storage facilities, canals, pipelines, pumps, water table control wells, and control structures. Table 3-2 provides a summary of these irrigation facilities.

Table 3-2
MID Irrigation Facilities

Facility Type	MID Facilities	Improvement District and Private Facilities
Canals (lined)	142.2 miles	9.8 miles
Canals (unlined)	23.7 miles	----
Pipelines	44.4 miles	152.8 miles
Wells/Deep Well Pumps	96	575*
Sidegates	1,317	----
Structures, SCADA-Monitored and/or –Controlled	13 headgates, 5 spills, and 4 flow measurements	0
Structures, Chart-Monitored, Manually Controlled	12 spills and 4 flow measurements	0

*Number of non-MID deep wells with MID represent staff's best estimate. This number was derived from MID's electric power records and may not reflect the actual number of private deep wells within the MID service area.

Source: MID Final Groundwater Management Plan, Table 2-1.

Groundwater management in MID has been influenced by Modesto's rapid growth. For much of its history, Modesto relied exclusively on groundwater, and thus, its population growth has been accompanied by declining groundwater levels. Between 1924 and 1994, groundwater levels under Modesto declined about 42 feet, with most of this decline occurring after World War II. In 1994, its sole reliance on groundwater ended when MID completed the MRWTP, a 30 mgd domestic water project that treats Tuolumne River water for delivery to the City. This municipal and industrial water treatment plant has helped offset declining groundwater levels in the Modesto area.

3.2.2.5 Groundwater Use

MID has both irrigation wells and drainage pumping wells. Prior to widespread urban development, the large influx of surface water for irrigation in MID led to the development of a shallow water table on the west side of the district. To protect crops from the rising water table, groundwater management through shallow groundwater pumping was initiated in 1918. MID now owns and operates 55 water table control wells that are used to maintain groundwater levels below crop root zones. These wells are shallow (usually less than 100

feet), are perforated throughout their depth, and are generally pumped during the irrigation season. Water table control pumping protects lands by promoting the aeration of the root zone and by allowing naturally occurring salts to leach from the root zone. To the extent feasible, water from the water table control wells is pumped into the irrigation system to supplement surface water.

In recent years, water table control pumping has become less important. The reasons for this change include increased groundwater pumping in the urban area, the use of irrigation conservation practices and new irrigation technologies, and increased groundwater pumping for agriculture. The combined effect has resulted in a lowering of groundwater levels, allowing some MID water table control wells to be converted to irrigation wells to augment the district's surface water supply.

Table 3-3
Description of MID Irrigation and Drainage Wells

Irrigation Wells	44
Water Table Control Wells	55
Well Construction Summary	98 by cable tool 1 by gravel pack
Casing Depths	50 to 400 feet
Annular Seals?	Required after 1985
Typical Depth of Seal	50 to 100 feet

Source: MID Final Groundwater Management Plan, Table 3-2.

Because of the availability of surface water, significant groundwater pumping for irrigated agriculture did not occur in MID until the late 1970s, during one of the most severe droughts on record. MID now owns and operates 44 wells developed for the specific purpose of water supply. These wells are often used to smooth canal flow fluctuations, to improve irrigation delivery service, and to reduce canal spills. Many landowners in MID also operate their own irrigation wells. MID irrigation and water table control wells are tallied in Table 3-3.

3.2.2.6 Ongoing Activities

The MID partnership with the City of Modesto to provide domestic water is an important conjunctive use effort. Other ongoing activities conducted by MID include:

- Active participation in the Association to manage the basin's groundwater resources
- Monthly monitoring of all groundwater wells
- Estimation of pumping from agricultural wells
- Periodic agricultural suitability testing on all irrigation and drainage wells
- Periodic mapping of groundwater elevations
- Implementation of water conservation projects
- Water table control through pumping of water table control wells

3.2.2.7 Issues of Concern

The fundamental issue of concern for MID is maintaining a sustainable balance between groundwater use and groundwater recharge. Municipal and industrial water demand is projected to grow in the basin in response to increasing population. Urban water conservation and reuse practices can help buffer growth in demand. At the same time that groundwater use is expected to grow, some important pathways for groundwater recharge are expected to decline because of the urbanization of farmland and conversion of fields now irrigated using surface irrigation techniques to more intensively managed techniques (such as drip irrigation) that reduce both water applications and deep percolation. Some agencies are concerned that changing irrigation methods (e.g., from flood irrigation to drip irrigation) will reduce groundwater recharge and contribute to future declines of groundwater levels.

Groundwater use in the MID management area varies from year to year and increases significantly during drought years, when groundwater is a more significant component of the water supply. Groundwater quality in some locations in MID has been degraded from urban, industrial, and agricultural operations, and as groundwater recharge is reduced by urban development, less blending of groundwater results. This leads to an increasing concentration of salts and other contaminants and the increased risk of degradation. Agricultural water use efficiency that reduces deep percolation could be detrimental to groundwater levels and groundwater quality in some areas.

MID has identified a need to coordinate the operation of its wells to better respond to water supply, water table control, water quality management, and energy use objectives. In addition, identifying and protecting areas that may serve as dedicated groundwater recharge zones are priorities.

3.2.3 City of Oakdale

3.2.3.1 Background

The City of Oakdale provided water to a population of approximately 15,800 persons in 2001. The water system also provides potable water to commercial, industrial, and public facilities throughout the city.

3.2.3.2 Location

Oakdale is located near the geographical center of OID (Figure 1-1) and lies entirely within the Modesto Groundwater Subbasin.

3.2.3.3 Water Supply

The City of Oakdale draws water from nine wells located in the Modesto Groundwater Subbasin. Water pumped from the aquifer meets the standards of Title 22 and is suitable for direct potable use without treatment. The City's water supply system is operated under a

permit granted by the California Department of Health Services on August 20, 1964. The permit has been amended as needed to reflect changes in system facilities.

3.2.3.4 Facilities

The City's water system consists of nine deep wells that supply groundwater to a distribution pipe network; two of these wells are newly completed. Currently, there is one 500,000-gallon steel storage reservoir located in northeast Oakdale at the intersection of Valley View Drive and the Stanislaus River bluff. The majority of the water system is controlled and monitored by a remote telemetry system located at the Public Works Center at Fifth and I Streets in southeast Oakdale. Table 3-4 describes the service connections in the city. Table 3-5 describes the characteristics of wells owned and operated by the City.

Table 3-4
Service Connections in the City of Oakdale

Type	Metered	Flat Rate	Total
General and Residential	5,175	5	5,180
Commercial	81	13	94
Industrial	19	0	19
Agricultural (irrigated)	0	0	0
Other Water Systems	8	0	8
Total Active Connections	5,283	18	5,301
Inactive Connections			62
Fire Hydrants			±630
Backflow Prevention Devices			±167

Source: City of Oakdale, Water Master Plan, page 2-1.

There are two active booster pumps operating within the distribution system. The Burchell Hill booster station is located in northeast Oakdale and provides the pressure needed to supply the Burchell residential subdivision and an older residential area to the west. The booster station at the site of Well 5A serves a high-pressure zone in the southern part of the city.

Table 3-5
Description of City of Oakdale Wells

Public Water Supply Wells	9
Well Construction Summary	98 by cable tool 1 by gravel pack
Casing Depths	
Annular Seals?	Yes
Typical Depth of Seal	

The water distribution system contains approximately 392,500 feet of mains, ranging in diameter from 2 to 16 inches. The original distribution system was all steel pipe. Over the last 13 years, asbestos cement pipe has been introduced, and most recently, PVC pipe has been used for system extensions and upgrades.

3.2.3.5 Water Use

The demand for municipal water depends, generally, on climate, distribution of land use, cost of water, availability of private sources of supply, landscape demand, and cultural attitudes. In Oakdale, nearly all residential, commercial, and industrial users are metered and average

daily per capita water use for 2000–2001 was estimated to be 248 gallons. This is a typical rate for small San Joaquin Valley cities with metered water supplies. Studies indicate that metering and associated pricing may result in an approximately 10 to 20 percent reduction in a community's water consumption, an estimate supported by the observation that the average daily per capita water consumption for some San Joaquin Valley communities without meters ranges from 300 to 350 gallons.

3.2.3.6 Influence of Land Use on Water Use

The mix of land uses within a city influences water use. Open spaces such as parks or schools also have a smaller water demand than most industrial areas. Table 3-6 presents the distribution of various land use categories in the City of Oakdale.

Table 3-6
Distribution of Land Uses in the City of Oakdale

Land Use per General Plan	Area (acres)	Percentage
Agricultural	4.39	0.1
Agricultural residential	29.92	1.5
Central business district	101.79	5.1
Estate	0.05	0
General commercial	186.88	9.3
High-density residential	6.58	0.3
Industrial	179.65	9.0
Low-density residential	1,109.31	55.0
Medium-density residential	209.56	10.5
Office	13.50	0.7
Open space	7.95	0.4
Park	46.20	2.3
Public/semi-public	75.37	3.8
School	15.99	0.8
Single/family light-density residential	17.17	0.9
Total	2,004.31	100.0

Source: City of Oakdale, Water Master Plan, page 3-5

Table 3-7 presents the estimated annual average and maximum per capita daily water demands for Oakdale, given a 3 percent rate of population growth and two scenarios for per capita water consumption.

Table 3-7
Water Demand Projections for the City of Oakdale

Year	Estimated Population	Average Day (gallons per minute)		Maximum Day (gallons per minute)	
		(1)	(2)	(1)	(2)
2005	17,773	3,086	3,679	5,863	6,990
2015	23,886	4,147	5,884	7,879	11,180
Build-Out per General Plan		----	7,569	----	14,381

Source: City of Oakdale, Water Master Plan, page 3-11.

(1) Based on population projections and an average water consumption of 250 gallons per capita per day.

(2) Based on land use development from the Oakdale Planning Department and corresponding demand coefficients for various land uses.

3.2.3.7 Ongoing Activities

Ongoing groundwater management activities by the City of Oakdale include the following:

- Active participation in the Association to manage the basin's groundwater resources
- Monitor water levels in all wells monthly
- Test water quality in accordance with Title 22
- Enacted a well ordinance adopting the California Wells Standards (Bulletin 74-81) and all supplements

3.2.3.8 Issues of Concern

Issues of concern for the City of Oakdale are primarily related to the potential future degradation of groundwater quality and development taking place over recharge areas. Water levels in some wells are impacted by production wells at adjacent industrial plants.

3.2.4 Oakdale Irrigation District

3.2.4.1 Background

OID was organized on November 1, 1909, under the Wright Act. In July 1910, the OID and its neighboring district, the South San Joaquin Irrigation District (SSJID), purchased an established ditch system, known as the Tulloch System. This system was developed in the 1880s by Charles H. Tulloch, who had purchased the water rights, a ditch, and a small diversion dam built for working placer gravel near Knights Ferry. Farmers later extended the ditch, known as the Old Tulloch Ditch, into the valley area to serve some 6,000 acres of farmland, including an area around Oakdale.

Currently, OID encompasses approximately 72,345 gross acres that support four major groups of crops—irrigated pasture, oats-corn (double crop), rice, fruits and nuts—and miscellaneous crops such as berries, melons, and onions.

3.2.4.2 Location

OID is located in Stanislaus and San Joaquin Counties on the eastern side of the San Joaquin Valley (Figure 1-1). Approximately three-fifths of its service area lies south of the Stanislaus River and is within the Modesto Groundwater Subbasin. The remaining two-fifths of the service area lie north of the Stanislaus River and are within the Eastern San Joaquin Groundwater Subbasin.

3.2.4.3 Water Supply and Storage Facilities

By 1912, OID and SSJID had abandoned the old miner's diversion dam and begun construction of the Goodwin Diversion Dam, an 80-foot-high, double concrete arch dam, which was completed in 1913. Between 1913 and 1925, the service area inflated to 20,000 acres, an increase of more than 300 percent over 12 years. Until 1925, irrigation was dependent upon the natural flow in the Stanislaus River, which was far from adequate to irrigate the 20,000-acre service area. In response to this, OID and SSJID voted $2,200,000 in bonds to finance construction of the 112,500 acre-foot Melones Reservoir, which was completed on December 15, 1926. The districts negotiated a contract with PG&E for the sale of the falling water benefits below the dam for hydropower generation. These payments completely amortized the bond issue without imposing a tax burden upon the landowners in the districts.

Between 1931 and 1938, OID constructed 25 deep wells to supplement its surface water supply and to meet the demand for water late in the irrigation season. Nevertheless, by 1938, both OID and SSJID found they were desperately short of irrigation water. To address this water supply problem, the Tri-Dam Project was developed, with power generation as a secondary purpose. In 1948, sites were approved at Donnells and Beardsley on the Middle Fork of the Stanislaus River and at Tulloch, above Goodwin Dam, and the project was completed in 1955. The combined storage capacity for the three reservoirs is 230,400 acre-feet, and the combined annual power generation is approximately 533,000 megawatt-hours. Additionally, in 1984, the Sand Bar Hydroelectric Powerhouse Project, which annually generates approximately 93,000 megawatt-hours, was completed.

In 1980, New Melones Dam was completed. With a reservoir capacity of 2.4 million acre-feet, New Melones Reservoir effectively submerges the original Melones project. New Melones Dam was constructed by the U.S. Army Corps of Engineers and transferred to the U.S. Bureau of Reclamation. The dam and the reservoir were then incorporated into the Central Valley Project. Releases from New Melones Dam are now the principal source of irrigation water for OID.

3.2.4.4 Water Distribution Facilities

OID's distribution facilities include two main canals, one on each side of the Stanislaus River. The North Main Canal extends approximately 15 miles down into the floor of the valley from the joint OID/SSJID diversion downstream of Goodwin Dam. The South Main Canal is approximately 22 miles in length. Approximately 250 miles of lateral and sublateral distribution networks are served from these two main canals. Table 3-8 describes OID's irrigation facilities.

3.2.4.5 Groundwater Use

OID operates 22 groundwater wells. These wells produce an average of about 6,300 acre-feet per year. The District also operates 43 drainage and several reclamation pumps. It is estimated that these facilities discharge around 13,000 acre-feet per year. Most of the private wells in the district are for small farm and domestic use. Table 3-9 summarizes the characteristics of OID wells.

Table 3-8
Oakdale Irrigation District Wells

Irrigation Wells	22
Drainage Wells	15
Reclamation Wells	28
Well Construction Summary	22 by cable tool
Casing Depths	40-250 feet
Annular Seals?	Required after 1985
Typical Depth of Seal	40-100 feet

Table 3-9
Oakdale Irrigation District Facilities

District Facilities	
Canals (lined)	105 miles
Canals (unlined)	125 miles
Pipelines	100 miles
Deep Wells	22
Reclamation/Drainage Pumps	43
Turnouts	3,500
SCADA	8 RTUs
Monitored	25
Improvement District Facilities	
Deep Wells, Domestic	18
Domestic Service Connections	650

3.2.4.6 Ongoing Activities

OID's ongoing groundwater management activities include:

- Active participation in the Association to manage the basin's groundwater resources
- Monthly water level monitoring of some wells
- Estimation of well discharge
- Water conservation programs

- Regulation of wastewater disposal

3.2.4.7 Issues of Concern

Issues of concern at OID include improving the coordination of groundwater pumping to reduce power consumption and to better manage groundwater levels and water quality.

3.2.5 City of Riverbank

3.2.5.1 Background

Located along the Stanislaus River and State Highway 108, Riverbank was incorporated in 1922 and had a population of 17,004 in 2002.

3.2.5.2 Location

Riverbank is located approximately five miles west of Oakdale and has, for the most part, been detached from OID (see Figure 1-1).

3.2.5.3 Water Supply

The City of Riverbank relies on the Modesto Groundwater Subbasin for its water supply. In 2002, it pumped 3,777 acre-feet of water from the subbasin, using six wells (see Table 3-10). Two additional wells have become operational since 2002. Groundwater from its wells conforms to the requirements of Title 22 and is used directly for domestic supply.

3.2.5.4 Facilities

Table 3-10 describes the City of Riverbank's wells. The City of Riverbank currently has 5,863 active connections, summarized in Table 3-11.

Table 3-10
Service Connections in the City of Riverbank

	Metered	Flat Rate	Total
General and Residential	5,658	7	5,665
Commercial	166	7	173
Industrial	5	2	7
Agricultural (Irrigated)	0	0	0
Other Water Systems	18	0	18
Total Active Connections	5,847	16	5,863
Inactive Connections			78

Table 3-11
City of Riverbank's Wells

Well	Year Con-structed	Annular Seals	Well Construction Method
#2 (8th Street)	1956	Yes	Cable tool
#3 (Jackson)	1965	Yes	Cable tool
#4 (Pioneer)	1972	Yes	Cable tool
#5 (River Heights)	1978	Yes	Cable tool
#6 (Whorten)	1981	Yes	Cable tool
#7 (Crossroads)	1990	Yes	Cable tool
#8 (Novi)	2001	Yes	Gravel pack
#9 (Prospector)	2004	Yes	Gravel pack

Groundwater quality is generally good. The City of Riverbank monitors groundwater quality to ensure the delivery of good quality water to its customers. The current level of groundwater monitoring by the City is as follows:

- General mineral and general physical — every 3 years
- Inorganic chemicals — every 3 years
- Nitrate — annually
- Regulated VOCs — every 3 years
- Regulated SOC (only DBCP, EDB, simazine, and atrazine) — every 3 years
- Gross alpha — 4 consecutive quarters every 4 years

3.2.5.5 Ongoing Activities

Ongoing groundwater management activities by the City of Riverbank include:

- Active participation in the Association to manage the basin's groundwater resources
- Utilize a SCADA system permitting remote operation and monitoring of the wells
- Test water quality in accordance with Title 22
- Enacted a well ordinance adopting the California Wells Standards (Bulletin 74-81) and all supplements.
- Regulation of wastewater disposal

3.2.5.6 Issues of Concern

Two concerns facing the City of Riverbank are (1) the preservation of groundwater quality and (2) the increasing demand for water fueled by its rapid population growth. This growth is illustrated by the increase in population from 1990 through 2002. During these 12 years, the population doubled from 8,547 to 17,004 inhabitants.

3.3 Stanislaus County

The participation of Stanislaus County in groundwater management planning is valuable because it encompasses the entire study area of the Modesto Groundwater Subbasin and OID service area within the Eastern San Joaquin Groundwater Subbasin and could represent areas outside the water purveyors' service areas where water requirements are met by private pumping. It also has oversight responsibility for land use planning activities, water well

construction and destruction, groundwater contamination remediation, small public water systems, individual on-site sewage disposal systems, and hazardous materials within its jurisdiction. Therefore, the County's participation in development of this groundwater management plan serves the following functions:

- The County could represent water users not served by participating water purveyors.
- County participation enables the interaction between groundwater management activities and county land use planning.
- The County Department of Environmental Resources (DER) enforces the California Model Well Standards (Bulletin 74-81) and all supplements, as required by the California Water Code, in unincorporated areas.
- The DER issues permits for wells that supply small public water systems.
- The DER issues permits and inspects well construction and destruction in unincorporated areas and maintains a record of drilling logs of permitted wells.
- The DER issues permits to allow the use of hazardous materials.
- Groundwater elevations near approximately 150 contamination sites are reported to the DER.
- The DER has periodically mapped groundwater levels.
- The DER regulates, monitors, and inspects small public water systems for Title 22 compliance to ensure that safe, adequate, and dependable water supplies are available for domestic use. DER maintains a database and file records containing water quality monitoring records for approximately 200 small public water systems.
- The DER operates a pilot wellhead protection program.
- The DER identifies soil and groundwater contamination associated with leaking underground storage tanks and other point sources.
- The DER is responsible for regulating septic tanks and wastewater disposal in unincorporated areas.
- The Stanislaus County Public Works Department provides flood control in unincorporated areas.

Table 3-12 summarizes major programs that affect groundwater in the area of the Association.

Table 3-12
Major Programs Affecting Groundwater Within the Association's Boundaries

Facility or Operation	Involved Association Member(s)
Conjunctive use for irrigated agriculture	MID and OID
Domestic water supply	MID, Modesto, Riverbank, Oakdale, OID
Groundwater monitoring	All members
Storm water recharge basins	Modesto, Oakdale, County
Water conservation	All members
Drainage wells	MID and OID
Review and permitting of well construction	County, Modesto, Oakdale, Riverbank
Detection of soil and groundwater contamination	County
Pilot wellhead protection demonstration project	County
Regulation of small public water systems	County
Land use planning	County, Modesto, Oakdale, Riverbank
Wastewater management	County, Modesto, Oakdale, Riverbank
Flood control	County

Source: MID, Final Groundwater Management Plan, Table 3-1.

3.4 Land Use Planning Activities

Land use planning is a tool to manage the impacts of various land uses on the quantity and quality of the water supply, especially groundwater resources. The Association does not have any land use planning authority. Therefore, the Association's role is (1) to review current land use planning activities and guide the water planning efforts of the member agencies in regard to water management activities so that they consider future land development and (2) to encourage land use planning agencies to consider water management issues in their decision-making process. Some members of the Association (Stanislaus County and the three cities) have land use planning roles. In Stanislaus County, land use planning within the incorporated cities is carried out by the respective city. In most cases, Stanislaus County is not involved unless requested by the respective city. Both Stanislaus County and the irrigation districts are permitted to comment on city plans as part of the California Environmental Quality Act process. In unincorporated areas, land use planning is conducted by Stanislaus County's Planning Department and approved by the Board of Supervisors.

In land use planning, an important distinction needs to be made between *aquifer* (groundwater basin) and *groundwater management area*. Aquifer protection focuses on the entire groundwater basin. Groundwater management areas are subsets of the basin that can be delineated and prioritized for specific management purposes.

3.4.1 Agencies' Spheres of Influence

The sphere of influence is the potential area for annexation around an agency's service area and lands within the sphere of influence are subject to regulation by that agency. However, land within the sphere cannot be annexed until an environmental impact report has been completed and the appropriate Local Agency Formation Commission approves the annexation.

Annexation can be used as a tool in groundwater management. If an area currently served by groundwater is annexed by an irrigation district and is provided with surface water, this offers an opportunity for in-lieu recharge. This process can be used to balance the groundwater budget in a basin.

3.4.2 Planning for Growth

Stanislaus County is one of the fastest growing counties in California. Based on U.S. Census data, its population during the 1980s climbed from 265,000 to 370,000, for a total increase of 105,000 people (a 40 percent growth rate). This growth continued as the population grew to 454,600 in 2000, an increase of 84,600 (a 23 percent growth rate). Table 3-13 indicates that growth in Stanislaus County is projected to continue. Between 2000 and 2010, the County's population is expected to increase by 133,000 (29 percent) and between 2010 and 2020, by 124,500 (21 percent).

Table 3-13
Projected Population Growth in Stanislaus County

Data Source	2000	2005	2010	2015	2020
DOF – 2000	454,600	522,700	587,600	646,800	712,100
DOF - 1998			585,519		708,950

Source: State of California Department of Finance 1998 and 2000.

Since 1980, most of the population increase has occurred in the County's nine incorporated cities rather than the unincorporated area of the County. This concentration of growth in incorporated areas has increased the proportion of the County's population living in these areas and has fueled substantial increases in the spheres of influence of many incorporated areas. Planning for growth is being facilitated by the County and local agencies by their recognizing that increased cooperation is essential in addressing growth-induced issues.

3.4.3 Potential Future Annexations

Annexation by various entities within the Association is a tool for responding to population growth and for managing resources within their spheres of influence.

Annexation has the potential to improve water management by:

- Better linking the water service required by customers with the type of service available

- By providing service that meets broader water management objectives

For example, city annexation that provides city water services to small urban parcels now served by irrigation districts enables the customers to receive the flexible service they desire and enables the irrigation districts to focus their attention on lands best served by agricultural delivery schedules. This type of annexation provides water users with water service that is tailored to fit residential needs, while irrigation districts can focus on the basin's other water management issues. Irrigation district annexations of lands now being served by private wells allows surface water deliveries to replace groundwater pumping. This process, known as in-lieu recharge, supports aquifers by reducing the demand for groundwater pumping and increasing recharge from deep percolation of surface applied irrigation water. This process increases the overall water supply reliability of a region by enabling water agencies to conjunctively manage their surface and groundwater resources. In addition, water agencies can pump additional groundwater during drought periods without long-term groundwater overdraft in the basin. How annexation projects could impact or benefit a basin's groundwater levels and groundwater quality should be evaluated on a case-by-case basis.

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4 Groundwater Resources in the Modesto Basin

4.1 Introduction

This chapter describes the geology, aquifers, groundwater quality, and water use in the Modesto Groundwater Subbasin and includes the southeastern portions of the adjacent San Joaquin Groundwater Subbasin. Both subbasins are part of the much larger San Joaquin Valley Groundwater Basin. The locations of the Modesto and East San Joaquin Groundwater Subbasins are shown in Figure 4-1. The Cities of Modesto, Oakdale, and Riverbank and the communities of Salida, Empire, and Waterford use groundwater to supply their residents. MID and OID provide both surface water and groundwater for agricultural use. There are several large industrial water users in the basin. Local residents also rely on groundwater for potable water through numerous small water supply wells. Figure 4-1 shows the service area locations of the cities and irrigation districts.

Residential and agricultural interests in the western portions of subbasins are impacted by the presence of shallow groundwater. Historic lowering of the groundwater levels within portions of the basin reversed the natural groundwater balance. Groundwater was depleted in areas near Modesto, which resulted in a cone of depression. Since 1994, when a surface water treatment plant was constructed, groundwater levels within the cone of depression have begun to recover. In addition, there is a potential for increases in the amount of outflow of groundwater from the subbasin, resulting from the anticipated increase in groundwater use outside the subbasin. Groundwater continues to be impacted locally by the increases in industrial and municipal needs. Water quality problems include the presence of salts, uranium, pesticides, and volatile organic chemicals (VOCs).

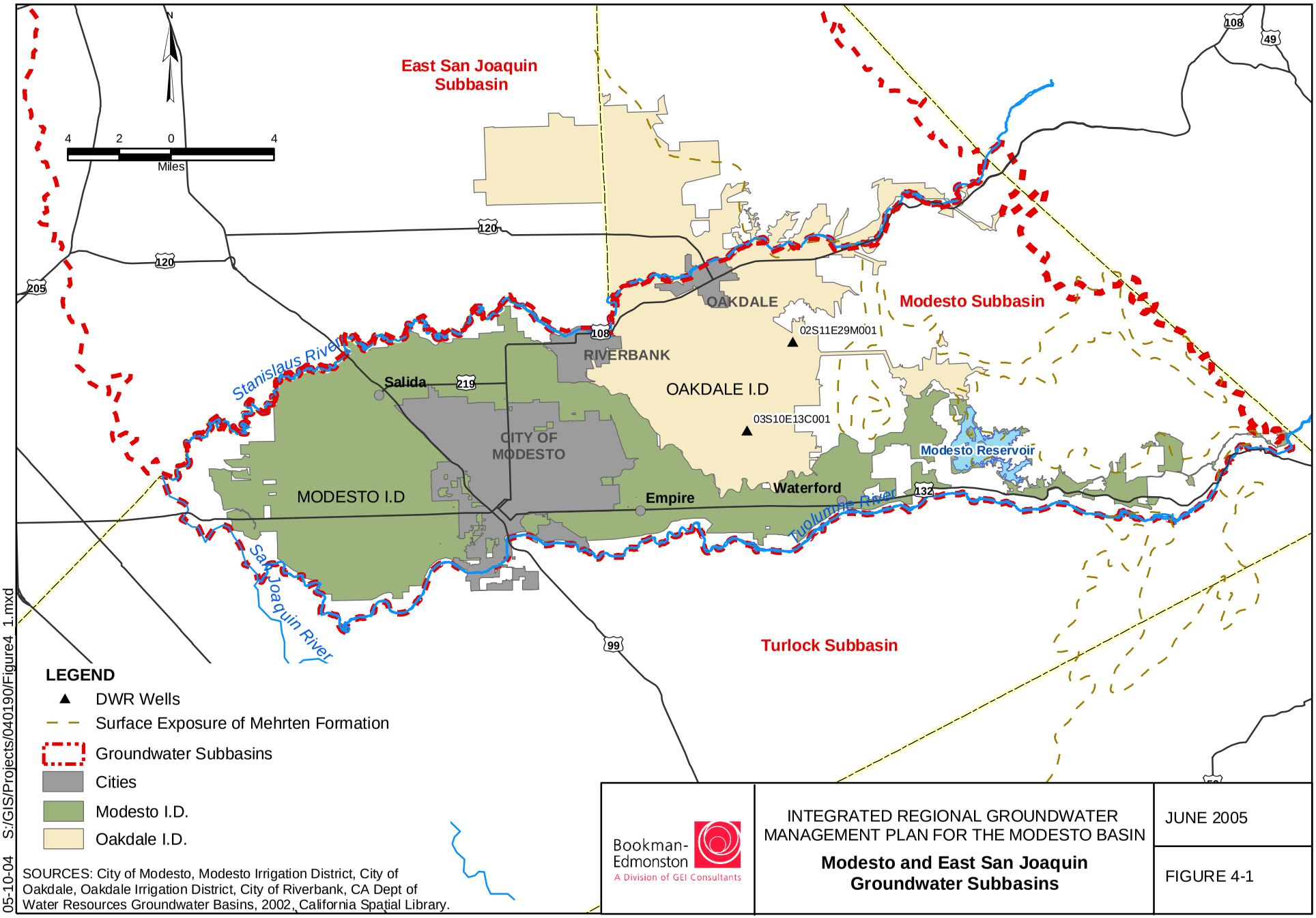
This chapter relates these occurrences and problems to geologic controlling features to allow conceptual planning of groundwater management options.

4.2 Hydrogeology

This section describes the geology, aquifers, hydraulic characteristics, groundwater levels, and the direction of groundwater flow.

4.2.1 Geology

The Modesto Groundwater Subbasin is located in the northern portion of the San Joaquin Valley, which is a structural trough about 200 miles long and 70 miles wide. The valley is filled with up to 32,000 feet of marine and continental sediments deposited during its periodic inundation by the Pacific Ocean and erosion of the surrounding mountains,


East San Joaquin Subbasin
Modesto Subbasin
Turlock Subbasin
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4 2 0 4
Miles
120
205
108
49
OAKDALE
02S11E29M001
RIVERBANK
Stanislaus River
Salida
219
OAKDALE I.D
03S10E13C001
CITY OF MODESTO
Modesto Reservoir
MODESTO I.D
Empire
Waterford
132
Tuolumne River
San Joaquin River
99
LEGEND
DWR Wells
Surface Exposure of Mehrten Formation
Groundwater Subbasins
Cities
Modesto I.D.
Oakdale I.D.
SOURCES: City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002., California Spatial Library.
05-10-04 S:/GIS/Projects/040190/Figure4_1.mxd
Bookman-Edmonston
A Division of GEI Consultants
INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN
Modesto and East San Joaquin Groundwater Subbasins
JUNE 2005
FIGURE 4-1

respectively. Only the upper 800 feet of these sediments contain water that is considered potable or suitable for agricultural use. These sediments are generally categorized as consolidated and unconsolidated sediments. The sediments are generally coarser-grained in the eastern portion of the subbasin, having been deposited as coalescing alluvial fans and rivers near the Sierra Nevada Mountains, and fine-grained to the west. The sediment beds dip toward the west.

4.2.1.1 Consolidated Sediments

The consolidated sediment beds that form the fresh water aquifers consist of the Ione, Valley Springs, and Mehrten sediment formations (from oldest to youngest). These sediments are exposed at the ground surface in the eastern portion of the subbasin and dip gently under the basin to the west. Figure 4-2 shows the distribution of these sediments and the locations of ground surface exposure. Figure 4-3 correlates the historic and recent nomenclature and the approximate depths beneath the city of Modesto.

The Ione Formation can generally be thought of as continental, lagoons, and marshes with periodic invasions by the ocean (CDMG 1975). The sediments consist of white to red clays, sands, and rounded gravels with layers of black to brown coal. The sands and gravels are locally cemented or have a high clay content.

The Valley Spring Formation can generally be considered to be a non-marine sequence of light-colored sediments that were eroded from volcanic rock (rhyolite). Ash and tuff are also present. The sediments consist of sandstone, siltstone, claystone with sandy clay, and sand and gravel generally in a clay matrix.

The Mehrten Formation was also eroded from volcanic rocks, but instead of being light-colored, they are typically dark-colored (andesite). The formation is composed of up to 800 feet of sandstone, breccia, conglomerate, tuff, siltstone, and claystone (Page and Balding 1973). This formation is typically identified by well drillers as “black sands.” The sandstone and conglomerate are capable of transmitting large quantities of groundwater. The Mehrten Formation may lie as shallow as 400 feet beneath the city of Modesto (Burow et al. 2004). The top of the Mehrten Formation appears to be an irregular surface with valleys and hills. The reworking and redeposition of the formation sediments make distinguishing the boundary of this formation difficult.

4.2.1.2 Unconsolidated Sediments

Historically, the unconsolidated alluvium has been classified as continental deposits (deposited in a freshwater environment), lacustrine and marsh deposits (pertaining to lakes), and Older Alluvium, Younger Alluvium, and flood-basin deposits (Page and Balding 1973). Recent efforts have reclassified these sediments into formations and include, from oldest to youngest, the Laguna, Turlock Lake, Riverbank, and Modesto Formations, Holocene alluvium (associated with stream channel and flood basin deposits) (Burow et al. 2004).

Figure 4-2 shows the distribution of these sediments and where they are exposed on the ground surface. Figure 4-3 correlates the historic and recent nomenclature and their approximate depths beneath the City of Modesto.

The Laguna Formation is characterized by alluvial deposits of gravel, sand, and silt in at least two upward-coarsening units separated by a well-developed palesol, a buried soil layer (Marchand and Allwardt 1981). The formation is composed generally of dark-colored volcanic sediments eroded from the Mehrten Formation but also contains some light-colored sediments that are likely derived from the granites (specifically, the granodiotites) from the Sierra Nevada.

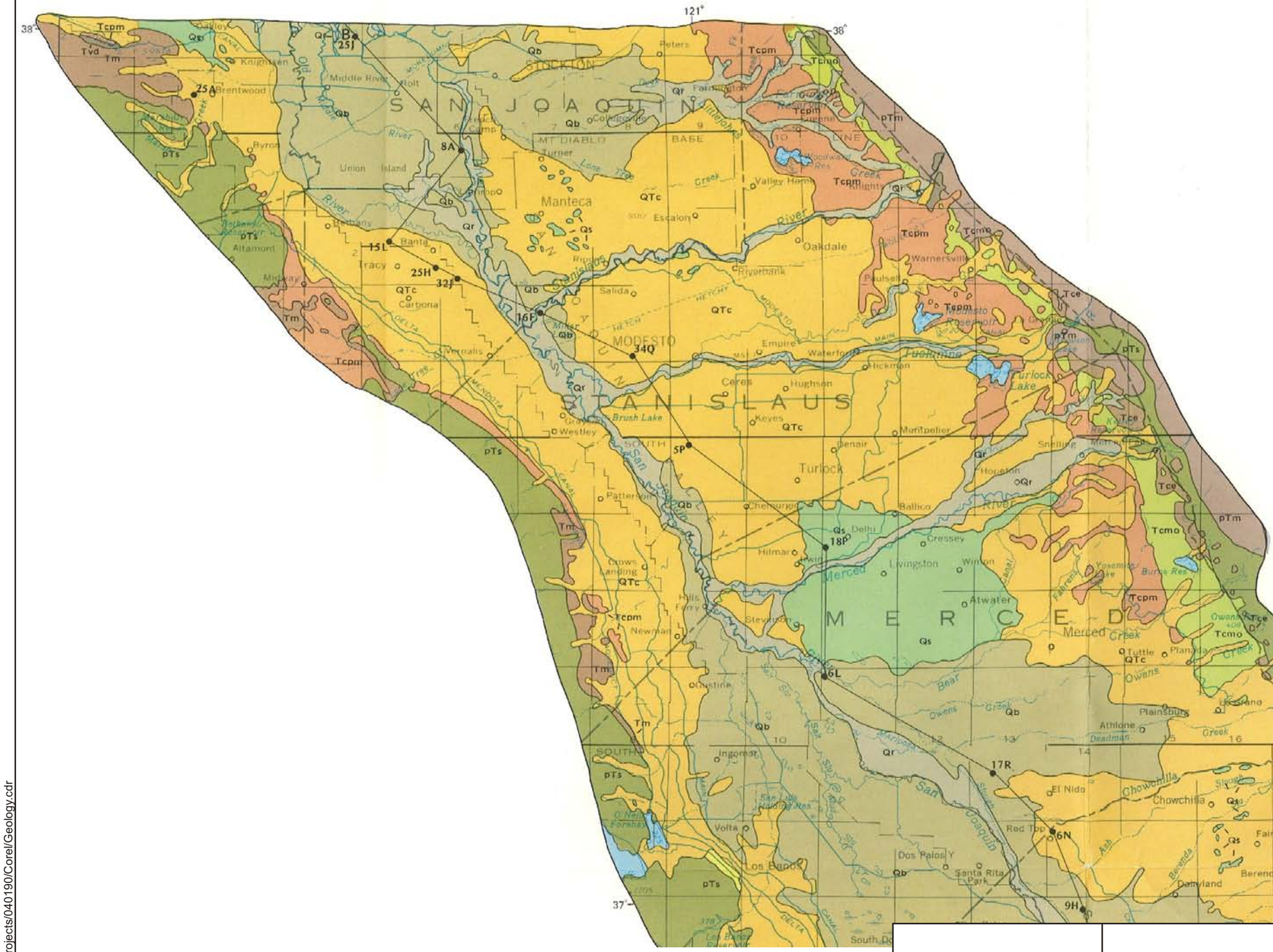
The Turlock Lake Formation is composed of sediments deposited by rivers from the Sierra Nevada. These sediments consist of two coarsening-upward sequences of silt, sand, and gravel that are likely the result of glacial outwash (Marchand and Allwardt 1981). The lower sequence of the formation contains dark volcanic sediments that were likely eroded from the Mehrten Formation and redeposited (Burow et al. 2004). Portions of the upper sequence are very coarse-grained sand and gravel incised valley fill and are potentially related to deposition from the Tuolumne River (Weissman et al. 2002).

The upper and lower sequences are separated in the western portion of the subbasin with a clay layer that formed in a large lake. An areally extensive diatomaceous lake clay occurs at the base of the upper unit of the Turlock Lake Formation and is referred to as the Corcoran clay (correlated to the occurrence of the E-clay in the southern portion of the San Joaquin Valley). This clay layer is regionally extensive with hydrologic significance. Although numerous silt and clay beds occur above and below the Corcoran clay, they cannot be correlated over large areas. Therefore, those beds are of only local importance to the confinement of groundwater (Page 1973).

The Corcoran clay is present at a depth of about 200 feet below ground surface (bgs) in the western portion of the subbasin (Page and Balding 1973). The clay is about 20 to 60 feet thick and may be locally eroded. The approximate eastern extent of the Corcoran clay parallels Highway 99 and is shown on Figure 4-4 (Burow et al. 2004). To the east and north, the clay becomes more silty and difficult to recognize along the edges, where the unit either grades into coarser materials of the same age or wedges out (Davis et al. 1959). Near the confluence of the Stanislaus and San Joaquin Rivers, a small portion of the Corcoran clay may be thin or missing and replaced with coarse-grained sediments (Burow et al. 2004).

North of the Stanislaus River, the extent of the Corcoran clay aligns with Highway 99. The OID service area does not overlie any areas where the Corcoran clay is present.

Overlying the Turlock Lake Formation are the Riverbank and Modesto Formations. These formations consist of river-deposited, light-colored sand, gravel, and silt. These sediments are oxidized and are likely to be derived from granites in the Sierra Nevada. The Modesto



DESCRIPTION OF MAP UNITS

Qs **Sand dunes (Holocene)** Windblown sand and dune sand

Qb **Flood-basin deposits (Holocene)** Clay, silt, and some sand; near Stockton consist of muck, peat, and other organic soils. In places may include part of the Modesto Formation (Pleistocene)

Qr **River deposits (Holocene)** Gravel, sand, silt, and minor amounts of clay; deposited along channels, flood plains, and natural levees of main streams. In places may include part of Modesto Formation (Pleistocene)

QTl **Lacustrine and marsh deposits (Pliocene to Holocene)** Clay, silt, and some sand; in subsurface include three widespread clays: A clay (Pleistocene and Holocene?); C clay (Pleistocene); and modified E clay (Pleistocene), includes Corcoran Clay Member of Tulare and Turlock Lake Formations

QTc **Continental rocks and deposits (Miocene to Holocene)** Heterogeneous mix of generally poorly sorted clay, silt, sand, and gravel; some beds of claystone, siltstone, sandstone, and conglomerate. Include some informal units: younger alluvium (Holocene), older alluvium (Pleistocene and Holocene?) and continental deposits (Pliocene and Pleistocene); three formations of Pleistocene age: Modesto, Riverbank, and Turlock Lake; Tulare Formation (Pliocene and Pleistocene) on western side of valley, Laguna Formation (Pliocene) on eastern side, and Kern River Formation (Miocene to Pleistocene?) on southeastern part

Tvd **Volcanic rocks and deposits (Miocene and Pliocene)** Massive tuff with large fragments of vesicular basalt northwest of Tracy; tuff, and volcanic breccia at south end of valley

Tcpm **Continental rocks and deposits (Miocene and Pliocene)** Gravel, sand, silt, clay, conglomerate, sandstone, siltstone, and claystone, contain andesitic material. Principally Mehrten Formation (Miocene and Pliocene) on eastern side of valley; include continental equivalents of Etchegoin Formation (Miocene and Pliocene) on western side of valley, and Chanac Formation (Miocene) on southern part

Tcmd **Continental and marine rocks and deposits (Miocene and Pliocene)** Gravel, sand, silt, clay, silty sandstone, and siltstone. Include continental and marine equivalents of San Joaquin Formation (Pliocene) and Etchegoin Formation (Miocene and Pliocene)

Tm **Marine rocks and deposits (Eocene, Oligocene, Miocene, and Pliocene)** Sand, clay, silt, sandstone, shale, mudstone, and siltstone. On western side of valley include the San Joaquin and Etchegoin Formations, Temblor Formation (Oligocene and Miocene) and Kreyenhagen Formation (Eocene). On southeastern side include the Santa Margarita Formation of various authors, the Round Mountain Silt, the Olcese Sand, the Freeman Silt, and the Jewett Sand (including the Pyramid Hill Sand Member) (all Miocene), and the Vedder Sand (Oligocene)

Tcmo **Continental rocks and deposits (Oligocene and Miocene)** Gravel, conglomerate, sand, tuffaceous sand, clay, and sandy clay; contain rhyolitic material on eastern side of valley. Principally Valley Springs Formation (Oligocene and Miocene) on eastern side of valley; unnamed fanglomerates (Miocene) and Bena Gravel (Miocene) in the southern part

Tcme **Continental rocks and deposits (Eocene to Miocene)** Conglomerate, sandstone, consolidated fanglomerate, claystone, tuff and tuff breccia; near Fresno consist of tuffaceous sand and gravel. Near Bakersfield include the Bealville Fanglomerate (Oligocene and Miocene) and the Walker Formation (Eocene to Miocene)

Tce **Continental rocks and deposits (Eocene)** Conglomerate and sandstone; along eastern side of valley contain anauxite. Principally Ione Formation (Eocene) on eastern side of valley

Unconformity

pTs **Marine rocks (Pre-Tertiary)** Sandstone, shale, siltstone, and some limestone, chiefly on western side of valley; in places contain abundant secondary gypsum. Include Moreno Formation (Cretaceous and Paleocene) and Panoche Formation (Cretaceous)

pTg **Granitic rocks (Pre-Tertiary)** Chiefly granitic rocks on eastern side of valley, in places consists of mafic intrusive rocks

pTm **Metamorphic rocks (Pre-Tertiary)** Metasedimentary, metavolcanic and other metamorphic rocks on eastern side of valley

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INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN

Geology Map

SOURCE: USGS, PP 1401-C Plate 2, 1969.

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FIGURE 4-2

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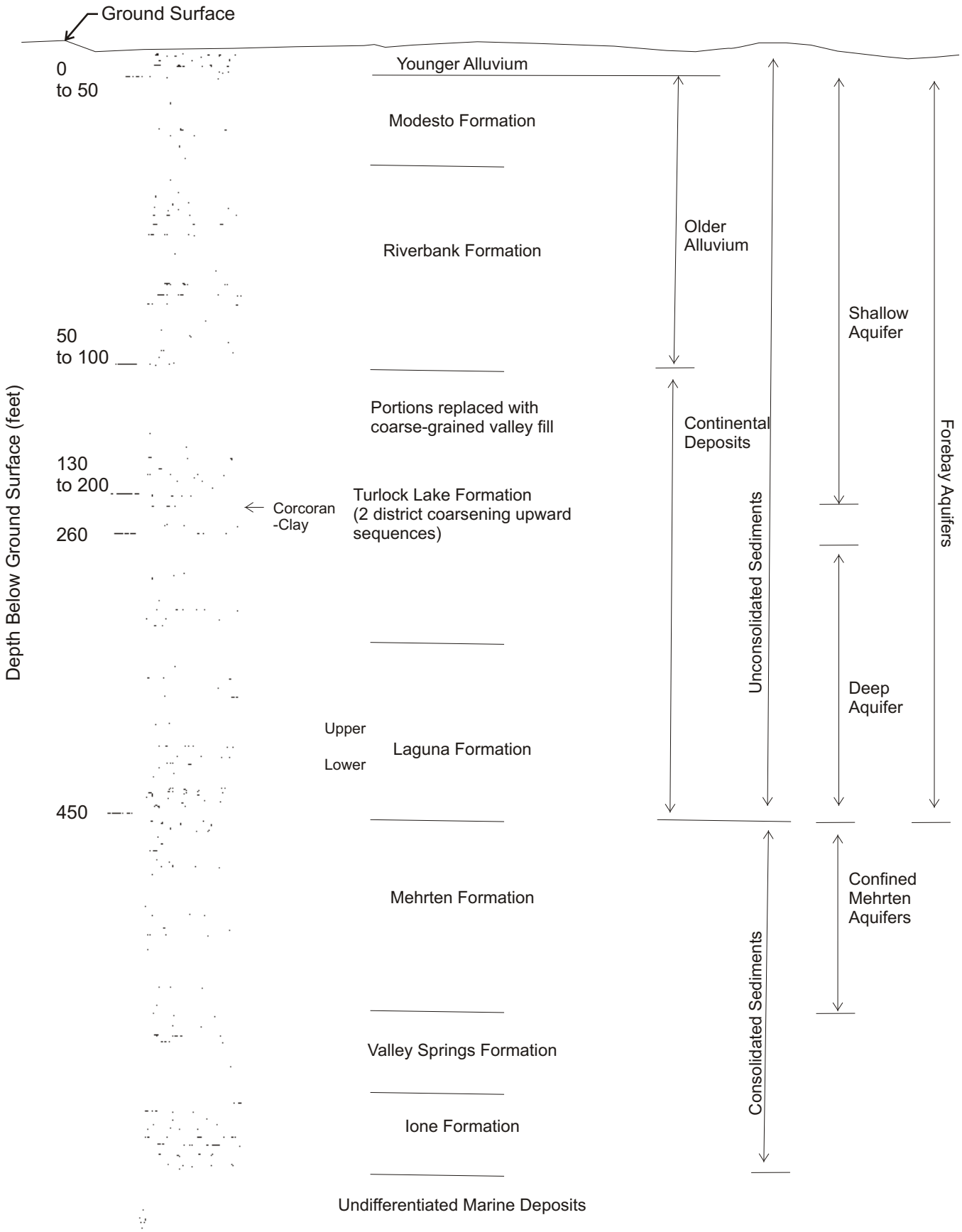

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INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN

Nomenclature and Their Depth Beneath The City of Modesto

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FIGURE 4-3

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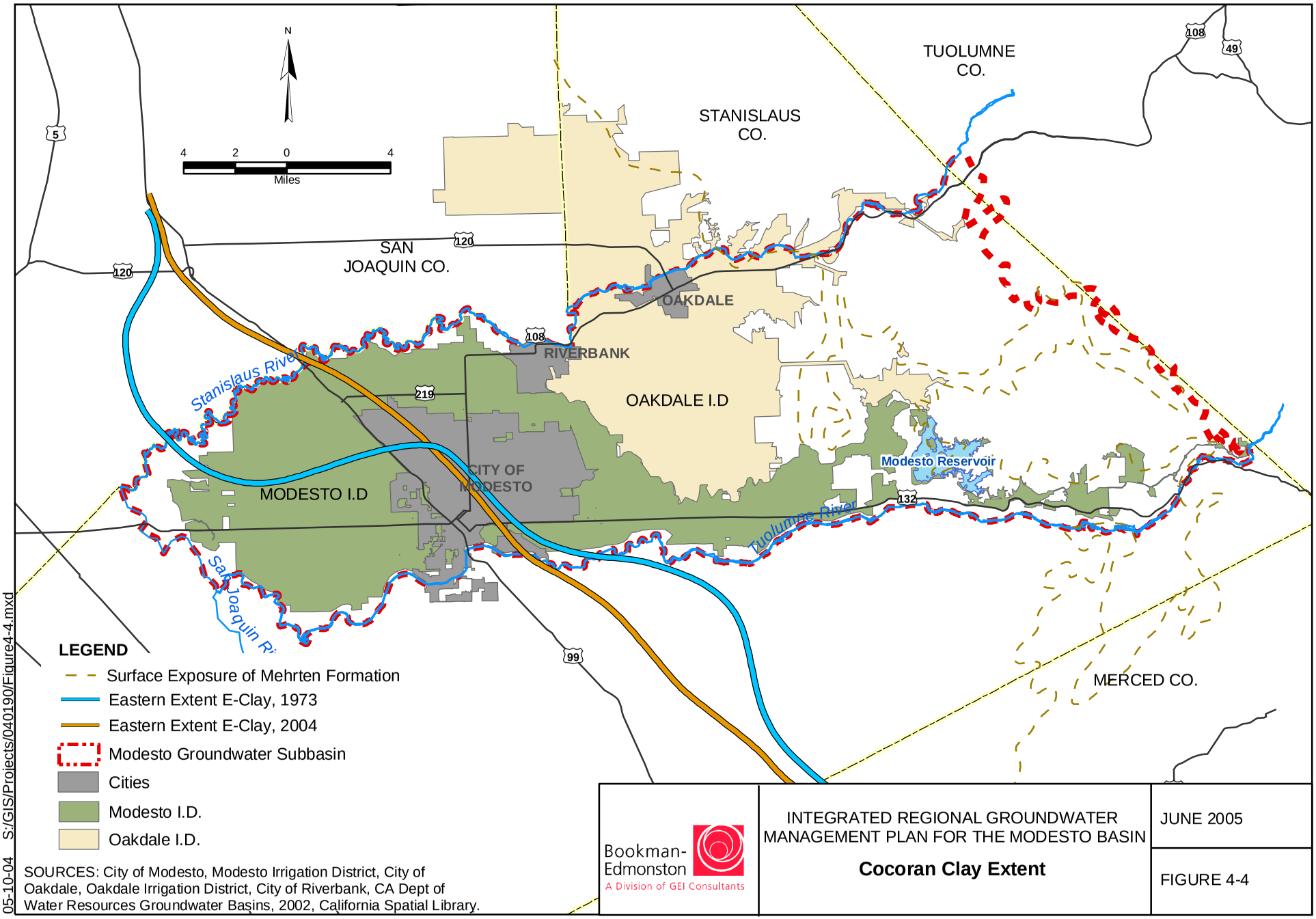
N
4 2 0 4
Miles
TUOLUMNE CO.
STANISLAUS CO.
SAN JOAQUIN CO.
MERCED CO.
OAKDALE
RIVERBANK
OAKDALE I.D
MODESTO I.D
CITY OF MODESTO
Modesto Reservoir
Stanislaus River
Tuolumne River
San Joaquin Ri
5
120
108
49
219
132
99
LEGEND
Surface Exposure of Mehrten Formation
Eastern Extent E-Clay, 1973
Eastern Extent E-Clay, 2004
Modesto Groundwater Subbasin
Cities
Modesto I.D.
Oakdale I.D.
SOURCES: City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002, California Spatial Library.
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A Division of GEI Consultants
INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN
Cocoran Clay Extent
JUNE 2005
FIGURE 4-4
05-10-04 S:/GIS/Projects/040190/Figure4-4.mxd

Formation is exposed on the ground surface throughout most of the subbasin. Coarse-grained sediments typically occur in patterns parallel to the Stanislaus and Tuolumne Rivers with finer-grained sediments (clay, silt, and very fine-grained sand) present between the rivers.

Relatively discontinuous shallow clay layers may be present in the near-surface sediments. These clay layers may perch percolating water and cause some of the high groundwater conditions in the western part of the subbasin. The USGS has compiled a database with sediment types that could be queried to obtain the depth and extent of these clay layers, along with hardpan layers. A topographic map of the shallow clay and hardpan layers should be constructed for those clays within 20 feet of ground surface.

4.2.2 Aquifers

Groundwater is present in the consolidated and unconsolidated sediments. There are two principal aquifers in the western portions of the study area (separated by the Corcoran clay) and one aquifer east of the Corcoran clay. Underlying all of these aquifers is a fourth aquifer. The aquifers are:

- The shallow aquifer that is present generally west of Highway 99, above the Corcoran clay. High groundwater levels sometimes cause problems for certain agricultural crops.
- The deep aquifer that is also located west of Highway 99, but is below the Corcoran clay and the shallow aquifer.
- The forebay aquifers located east of the Corcoran clay and merge with the shallow and deep aquifers west of Highway 99. The eastern extent of the forebay aquifers is where the Mehrten Formation is exposed at the ground surface. Most of OID overlies the forebay aquifers.
- The confined aquifers within the Mehrten Formation that underlie all of these aquifers. These aquifers are separated from the overlying aquifers by 60 to 120 feet of clay.

Figures 4-5 and 4-6 show a generalized schematic profile of the aquifers. Figure 4-7 shows their locations regionally.

The aquifer above the Corcoran clay has been called the shallow aquifer system. This aquifer is about 130 to 220 feet thick (Page 1977). Groundwater in the shallow aquifer ranges from unconfined to semi-confined and is present both in the Modesto and Riverbank Formations and in the upper sequence of the Turlock Lake Formation.

The aquifer below the Corcoran clay has been designated as the deep aquifer system where groundwater occurs under confined conditions. It is present in the lower sequence of the Turlock Lake and upper Mehrten Formations and extends to the base of fresh water.

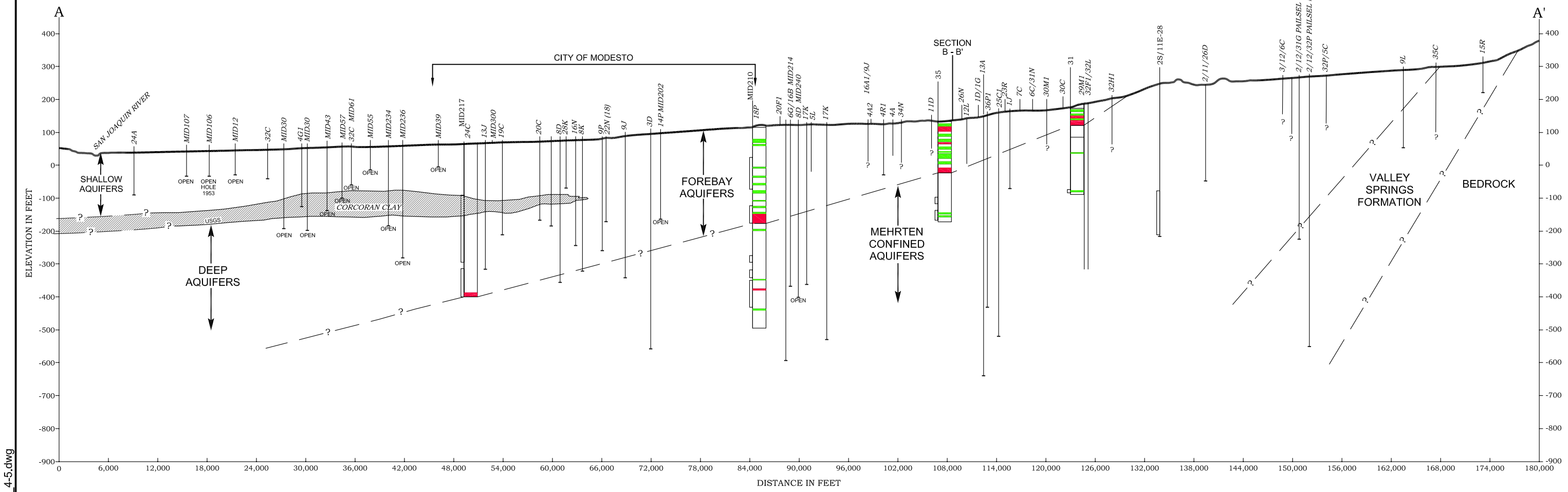
East of Highway 99, where the Corcoran clay is absent, groundwater occurs under unconfined to semi-confined conditions. This area supplies water to both the shallow and deep aquifers. These recharge areas are typically called forebays. The forebay area extends from the eastern extent of the Corcoran clay to the western limit of the exposed Mehrten Formation, as shown on Figure 4-7. The aquifer generally thickens to the west and thins to the east. Limited data show that the base of the forebay aquifer is a 20- to 40-foot-thick gravel (identified by the USGS as Laguna Formation) that daylights at the western exposure of the Mehrten Formation and dips at about 0.006 feet per foot. Figures 4-5 and 4-6 show the gravel layers in red and possible correlations. Because of the dip and the local occurrence of "lava" (breccia) overlying the gravel, this gravel may be within the Mehrten Formation. The gravel bed is pronounced south of the Stanislaus River, but its presence near the Toulumne River is uncertain. There are a few occurrences of gravel north of the Stanislaus River that could correlate with this marker bed. More data are needed to validate the extent and thickness of this gravel layer. Figures 4-5 and 4-6 show the location of the gravels.

The confined aquifer in the Mehrten Formation underlies all of the aquifers listed above. Limited data suggest that the aquifer is separated by a 60- to 120-foot clay layer beneath the area between the Stanislaus and Toulumne Rivers. Groundwater in the forebay and deep aquifers may be perched on top of this clay layer. Recharge to the Merthen Formation confined aquifers occurs in the individual sand beds that are exposed on ground surface or where sand beds intersect river alluvium in the eastern portion of the subbasin. Because of the clay, the aquifers probably receive little vertical recharge. North Stanislaus River clay is thinner and it appears to have been replaced with some sand beds. These beds may allow communication between the forebay and the confined Merthen Formation aquifers.

4.2.3 Groundwater Levels

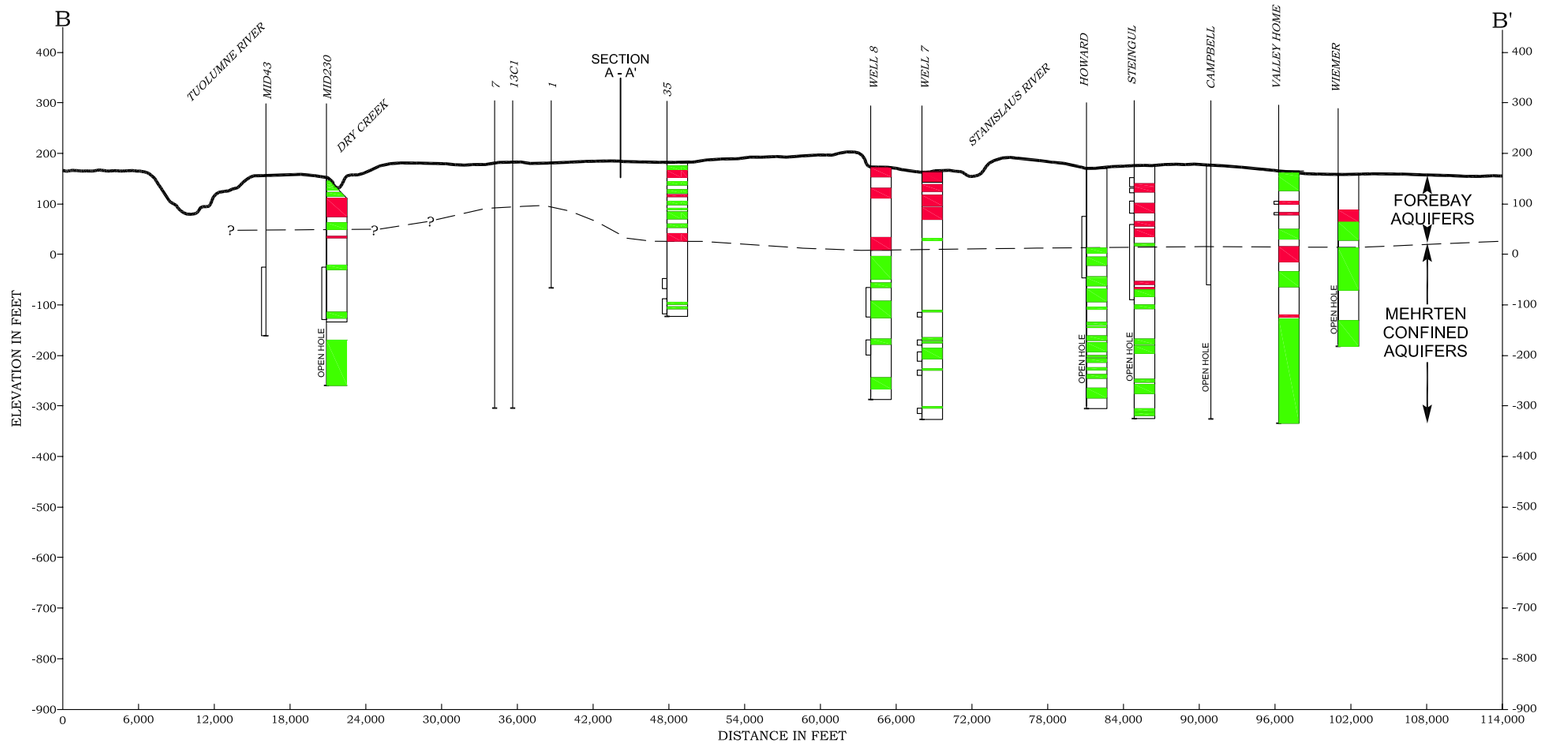
Groundwater levels were sorted regionally, based on well screen depths and the three types of aquifers.

Groundwater levels in the shallow aquifer, above the Corcoran clay, typically range from about 10 to 30 feet bgs. Figure 4-8 shows the groundwater levels in the shallow aquifer. Figure 4-7 shows the well locations. Groundwater levels from 1969 though 1983 remained relatively stable. Between 1984 and 1994, groundwater levels declined in most wells (MID 39, 40, 61, 103, and 196), while other wells (MID 68 and 102) remained at levels similar to those from before 1983. It is likely that drainage pumping and pumping in the shallow aquifer to augment irrigation water and for the City of Modesto caused the decline in water levels. As shown on Figure 4-7, Well 30E (112 feet deep), is located in Modesto.



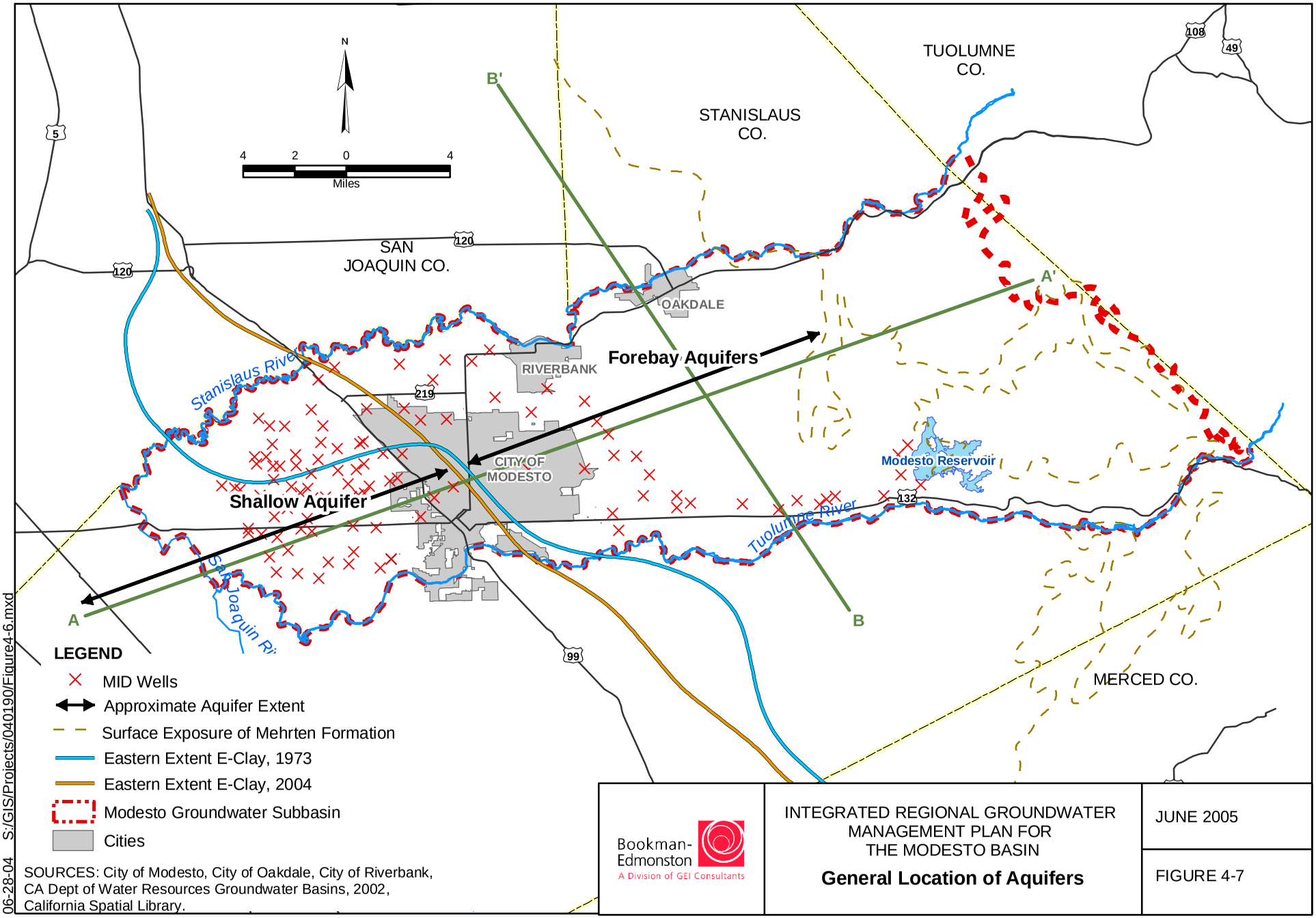
S:\Water Resource\Projects\042190\1000\FIGURE_4-5.dwg

INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN	Bookman-Edmonston A Division of GEI Consultants	SCHEMATIC PROFILE OF AQUIFERS - GEOLOGIC SECTION A - A'	
MODESTO, CALIFORNIA	042190.1000	APRIL 2005	FIGURE 4-5



S:\Water Resource\Projects\042190\1000\FIGURE_4-6.dwg

INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN	Bookman-Edmonston A Division of GEI Consultants	SCHEMATIC PROFILE OF AQUIFERS - GEOLOGIC SECTION B - B'	
MODESTO, CALIFORNIA	042190.1000	APRIL 2005	FIGURE 4-6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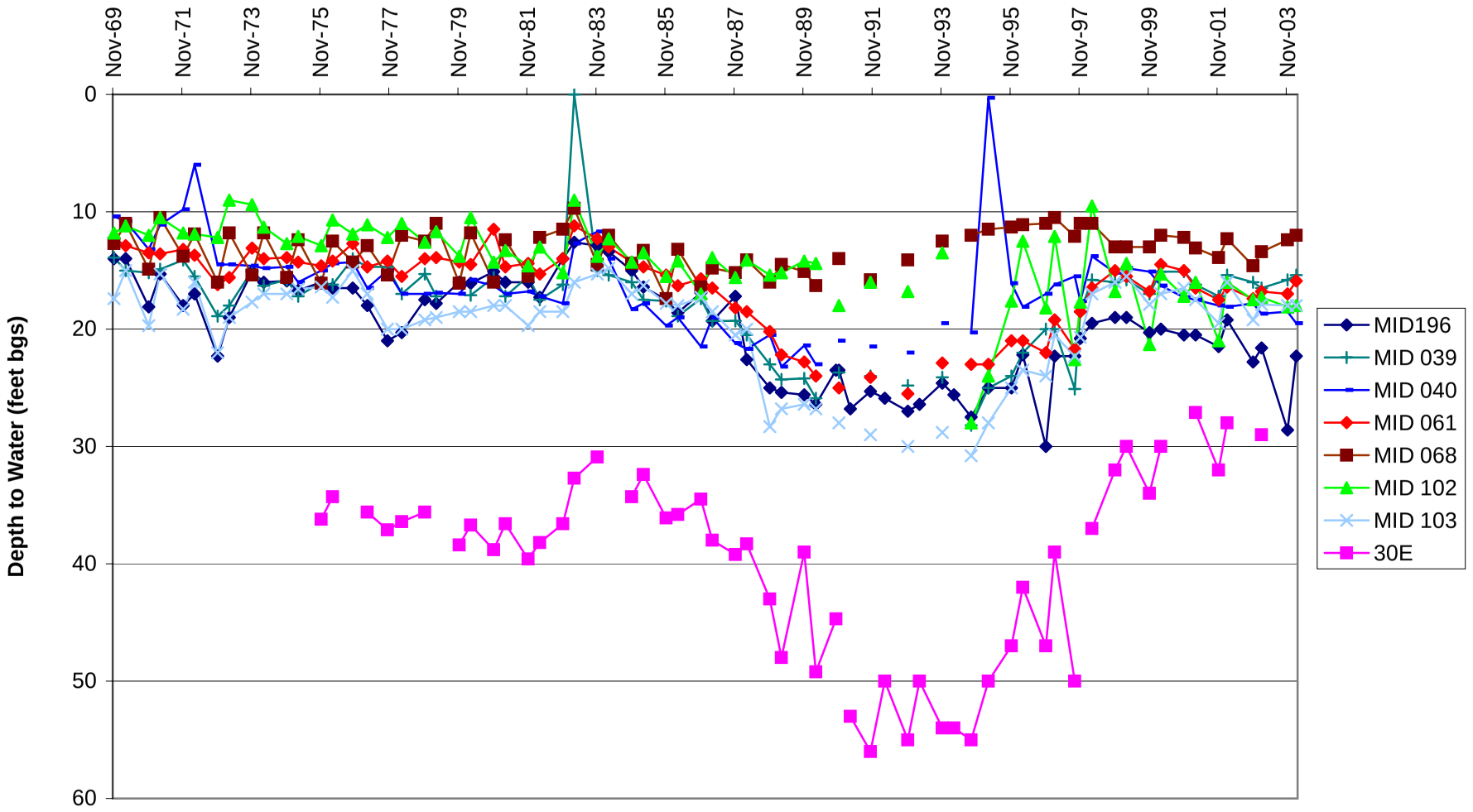
4 2 0 4
Miles
TUOLUMNE CO.
STANISLAUS CO.
SAN JOAQUIN CO.
MERCED CO.
B'
A'
A
B
OAKDALE
RIVERBANK
CITY OF MODESTO
Forebay Aquifers
Shallow Aquifer
Stanislaus River
Tuolumne River
San Joaquin Ri
Modesto Reservoir
5
120
219
132
99
108
49
LEGEND
MID Wells
Approximate Aquifer Extent
Surface Exposure of Mehrten Formation
Eastern Extent E-Clay, 1973
Eastern Extent E-Clay, 2004
Modesto Groundwater Subbasin
Cities
SOURCES: City of Modesto, City of Oakdale, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002, California Spatial Library.
06-28-04 S:/GIS/Projects/040190/Figure4-6.mxd
Bookman-Edmonston
A Division of GEI Consultants
INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN
General Location of Aquifers
JUNE 2005
FIGURE 4-7

Figure 4-8
Integrated Regional Groundwater Management Plan for the Modesto Basin
SHALLOW AQUIFER GROUNDWATER LEVELS



The water levels in the deep aquifer, below the Corcoran clay, cannot be assessed at this time because wells reviewed by this plan appear to be constructed in both the shallow and deep aquifers, which would result in an aggregate water level. The USGS recently constructed one monitoring well cluster to assess the groundwater levels in the shallow and deep aquifers. Additional monitoring wells need to be constructed to assess the conditions in the deep aquifer. The water level in deep aquifer may be about 4 to 6 feet deeper than wells in the shallow aquifer (Burow et al. 2004).

Groundwater levels in the forebay area range from about 25 to 70 feet bgs. Figure 4-9 shows groundwater levels in wells in this area. The water levels have generally been declining since at least 1969. From late 1982 through 1983, water levels rose, but resumed their downward trend until 1995; between 1995 and 1999, water levels again rose. Since 1999, groundwater levels have resumed a gradual decline. Although there have been two periods of rising groundwater, both associated with wet years, water levels in this area have not returned to their pre-1969 levels.

Many of the irrigation wells used by OID and MID in the eastern portion of the subbasin are screened in both the forebay and confined aquifers of the Mehrten Formation. Figures 4-5 and 4-6 illustrate this point. Figure 4-10 shows that few groundwater levels were available from wells solely constructed in the Mehrten Formation confined aquifer. The water levels show trends similar to those of the forebay aquifers. Groundwater levels in the confined aquifer also declined about 20 feet between 1969 and 2004.

Groundwater levels were locally depressed (up to 1994) because of municipal pumping for the Modesto urban area and the Riverbank, Oakdale, and Salida areas (MID 1996). The pumping depression resulting from the Modesto urban area pumping extends beneath and south of the Tuolumne River. Since the completion of a surface water treatment plant in 1994, water levels have recovered and the pumping depression has been reduced (Burow et al. 2004). In Figure 4-8, well 30E shows the water level recovery in the shallow aquifer beneath Modesto since 1994. Groundwater levels measured in the City of Riverbank wells are about 60 feet bgs. The groundwater levels have remained relatively consistent over 40 years.

MID uses its wells to lower the water levels in the shallow aquifer area. However, from the records reviewed, groundwater levels appear to be 10 feet or more below the ground surface and would not affect crops. More likely, MID's pumping from the shallow aquifer has been successful at maintaining water levels below 10 feet.

4.2.4 Groundwater Flow Directions

Groundwater contour maps show the direction of groundwater flow, recharge areas, and areas of discharge. The groundwater flow direction is typically 90 degrees to the groundwater contour. Groundwater levels in the shallow and forebay aquifers are typically

Figure 4-9
Integrated Regional Groundwater Management Plan for the Modesto Basin
GROUNDWATER LEVELS IN THE FOREBAY AQUIFER

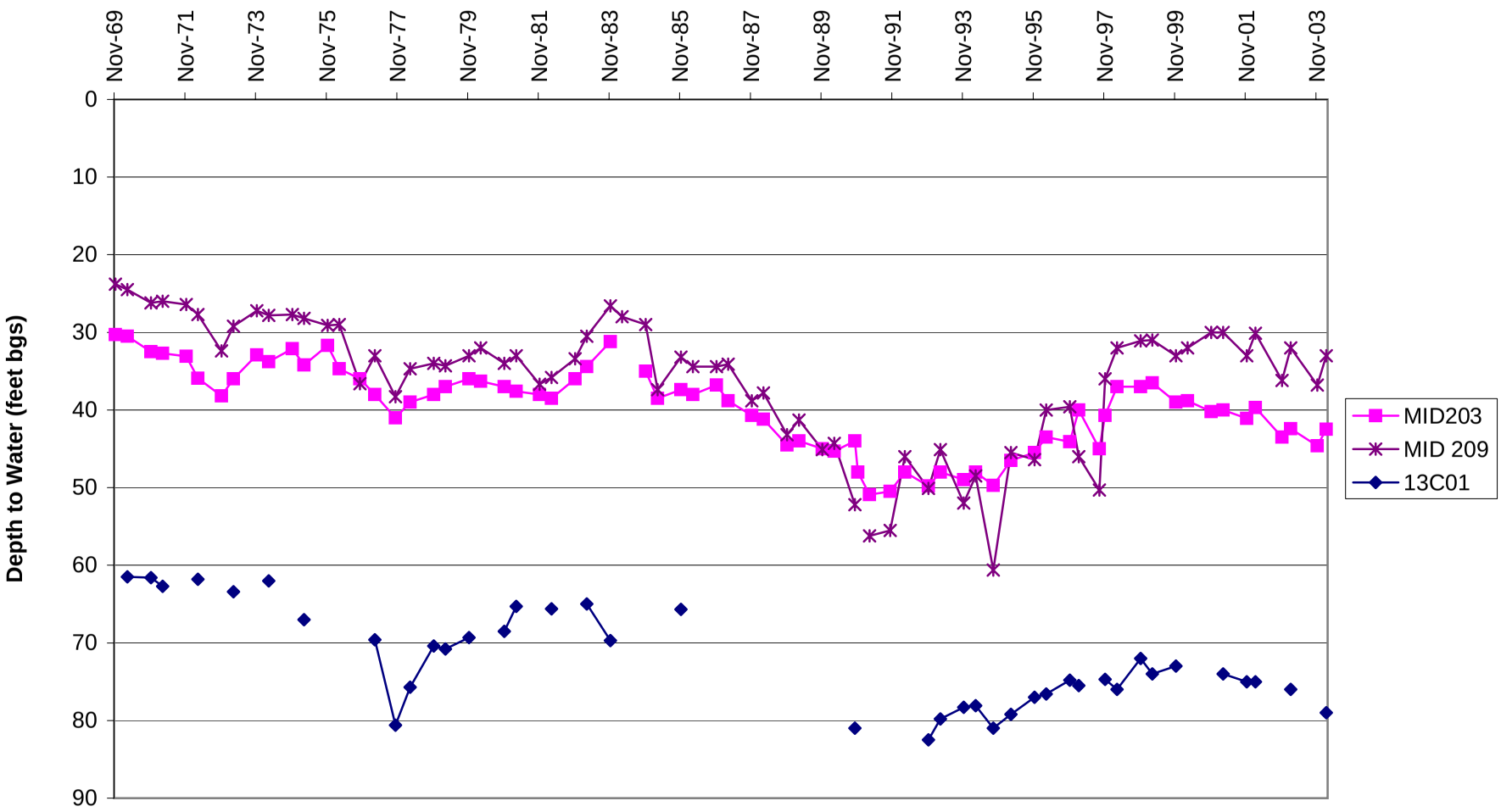
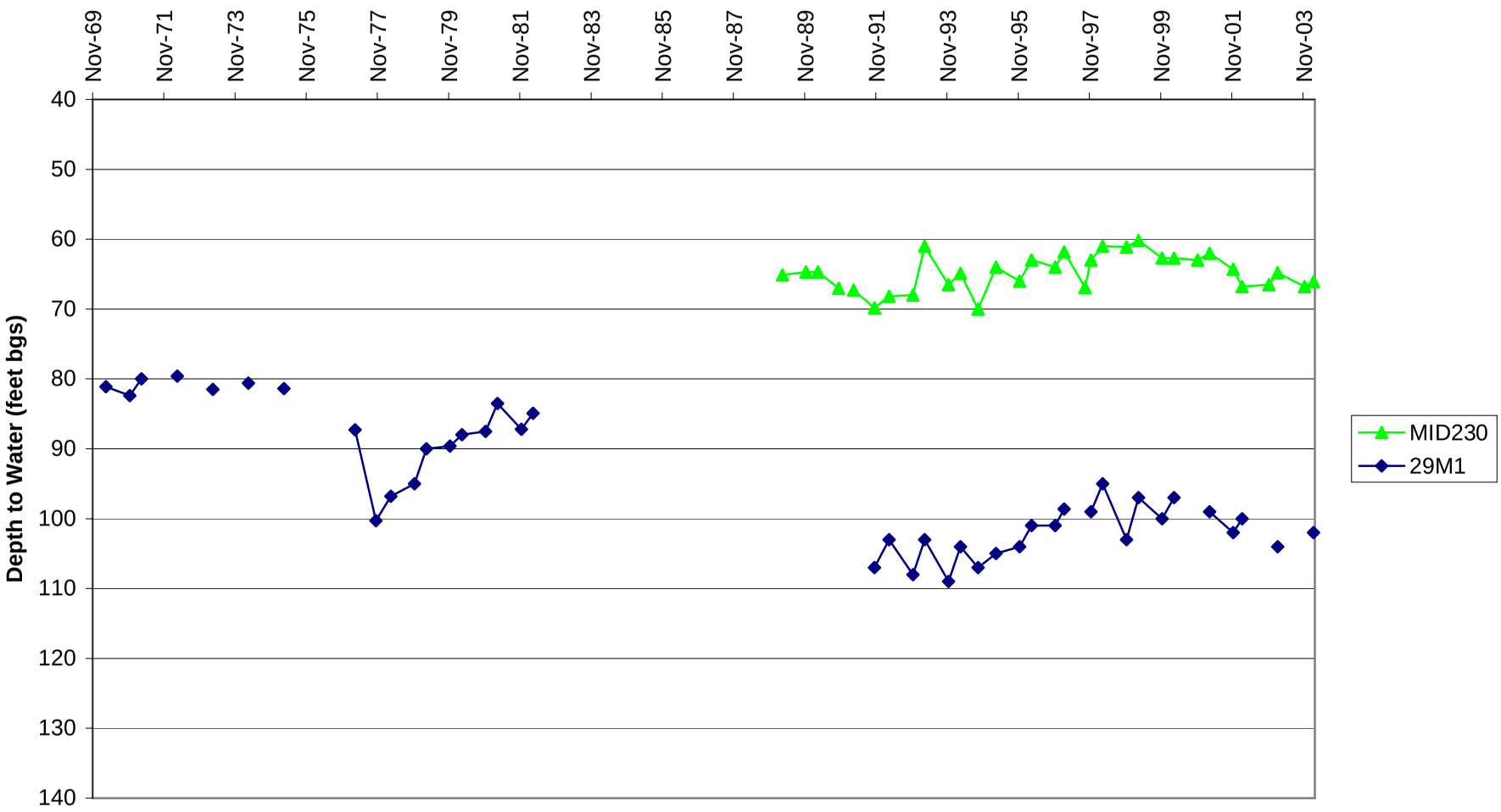


Figure 4-10
Integrated Regional Groundwater Management Plan for the Modesto Basin
GROUNDWATER LEVELS IN THE MEHRTEN CONFINED AQUIFERS



contoured together. In some instances, a few wells from the deep aquifers may also be contoured with these data, which may provide erroneous results. There are insufficient data at this time to develop a groundwater contour map for the deep aquifer (Burow et al. 2004). Figures 4-11 through 4-13 show groundwater contours in the shallow and forebay aquifers from 1971 through 2000. The maps show different flow directions, and therefore, the interpretation of the data varies considerably. There are also insufficient data near the rivers to determine true gaining and losing reaches and flow direction beneath the rivers. Conditions more likely change seasonally and by water year type. The discussion below is based on very limited available data.

In 1971, groundwater contours showed that groundwater generally flows from the east to west-southwest with recharge to the forebay aquifers occurring between the Stanislaus and Tuolumne Rivers (Page and Balding 1973). The contours suggest that groundwater is discharged to the San Joaquin and Tuolumne Rivers (gaining) along most of the reaches of the rivers. Because the contours generally cross the Stanislaus River at 90-degree angles, it suggests that the river is not a gaining stream nor does it recharge the groundwater. The map does not provide sufficient detail to assess whether groundwater is discharging to (gaining reaches) the Stanislaus and San Joaquin Rivers along the western edge of the subbasin.

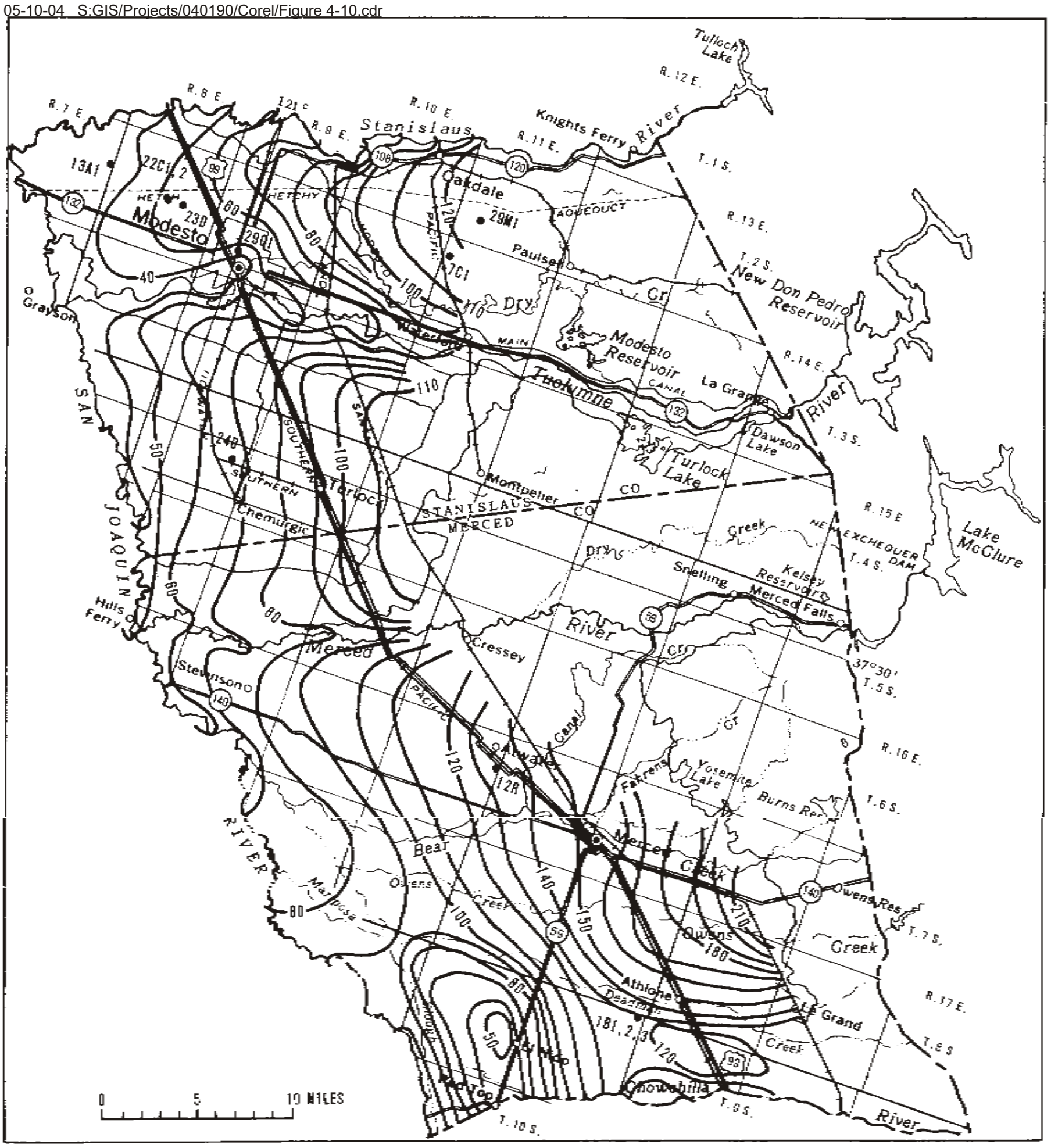
Groundwater level contours were prepared for 1985, a period of relatively high rainfall (wet year), and for 1994, after a prolonged period of relatively low rainfall and runoff (dry year) (MID 1996). Both maps again show that groundwater flow is generally from east to west with recharge occurring between the Stanislaus and Tuolumne Rivers. Both maps show a pumping depression has formed beneath the city of Modesto.

The contours show that the rivers have both losing and gaining reaches. Figures 4-12 and 4-13 show these reaches.

In 1985, the only losing reach was an approximately five-mile-long reach of the Tuolumne River near central Modesto. By 1994, this reach had extended to the east by approximately five miles. All of the Stanislaus River east of Highway 99 was apparently a losing stream.

In 1985 and 1994, apparent gaining reaches include the San Joaquin River and approximately seven miles of the Stanislaus River upstream of the San Joaquin confluence. Changes in the gaining reaches are present from wet year to dry year. In 1985, the gaining portions of the rivers were the Stanislaus River east of Riverbank and the Tuolumne River upstream of Empire. In 1994, the gaining reaches were reduced to a nine-mile-long reach of the Tuolumne River near Waterford and approximately five miles of the Tuolumne River upstream of the confluence with the San Joaquin River.

05-10-04 S:GIS/Projects/040190/Corel/Figure 4-10.cdr



Base from U.S. Geological Survey map of North and South Halves of State of California 1:500,000; 1970

EXPLANATION

60 — Water-level contour. Shows altitude of water level. Contour interval 10 feet; datum is mean sea level

29M1 — Well and number. Hydrograph shown on figures 15–17

Integrated Regional Groundwater Management Plan for the Modesto Basin

Water-level contours for the unconfined water body, spring 1971.

Figure 4-11

Legend

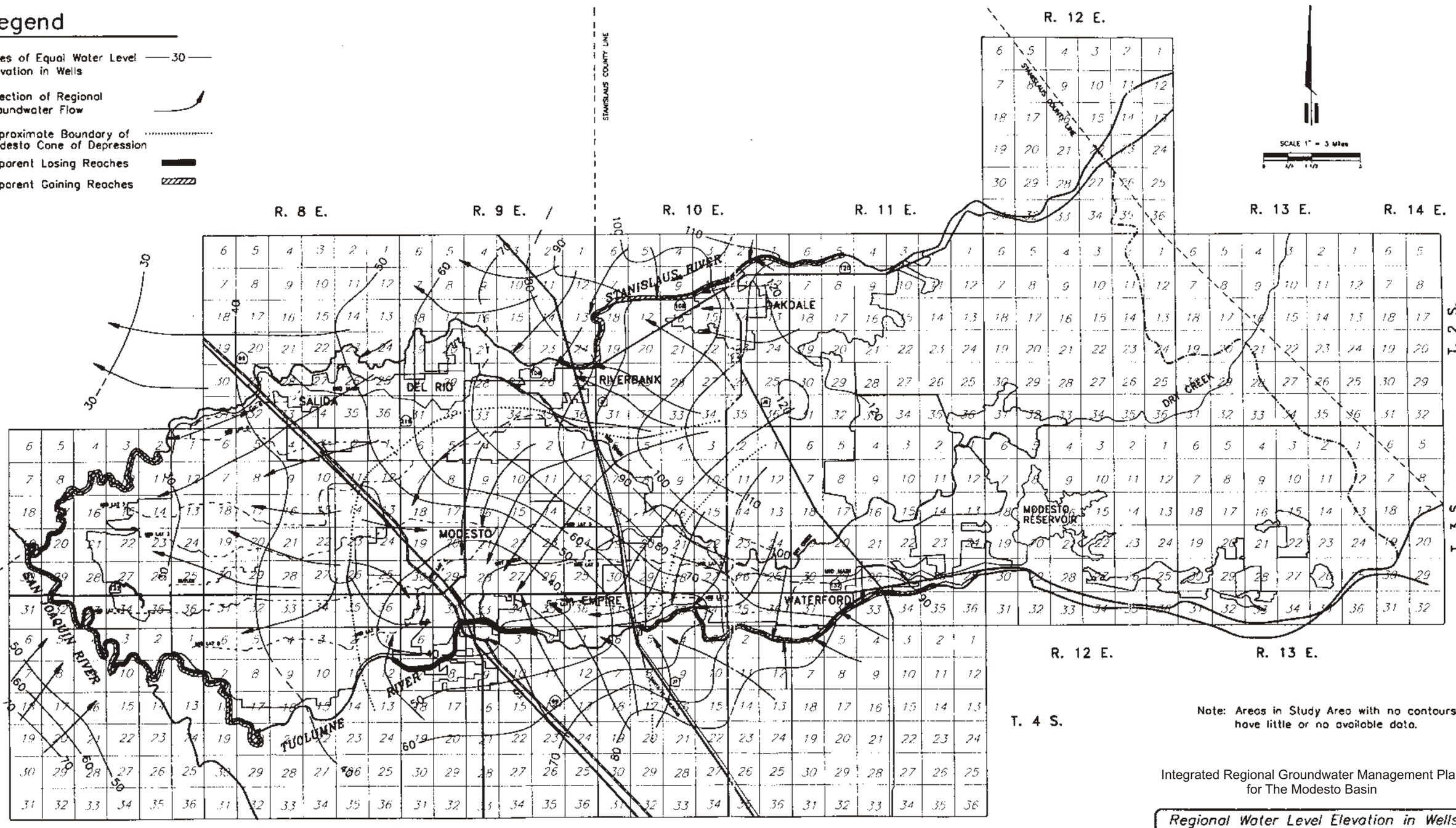
Lines of Equal Water Level Elevation in Wells —30—

Direction of Regional Groundwater Flow

Approximate Boundary of Modesto Cone of Depression

Apparent Losing Reaches

Apparent Gaining Reaches



Note: Areas in Study Area with no contours have little or no available data.

Integrated Regional Groundwater Management Plan for The Modesto Basin

Regional Water Level Elevation in Wells and Direction of Groundwater Flow Spring 1985

Figure 4-12

Reproduced from Development of a Groundwater Management Plan Phase 1 (1995)

05-10-04 S:GIS/Projects/040190/Corel/Figure 4-11.cdr

Legend

Lines of Equal Water Level Elevation in Wells —30—

Direction of Regional Groundwater Flow

Approximate Boundary of Modesto Cone of Depression .....

Apparent Losing Reaches

Apparent Gaining Reaches

R. 7 E. R. 8 E. R. 9 E. R. 10 E. R. 11 E. R. 12 E. R. 13 E. R. 14 E.

T. 2 S.

T. 3 S.

T. 4 S.

STANISLAUS COUNTY LINE

STANISLAUS RIVER

TUOLUMNE RIVER

SAN JOAQUIN RIVER

DRY CREEK

SALIDA

DEL RIO

RIVERBANK

OAKDALE

MODESTO

EMPIRE

WATERFORD

MODESTO RESERVOIR

SCALE 1" = 3 Miles

Note: Areas in Study Area with no contours have little or no available data.

Reproduced from Development of a Groundwater Management Plan Phase 1 (1995)

Integrated Regional Groundwater Management Plan for The Modesto Basin

Regional Water Level Elevation in Wells and Direction of Groundwater Flow Spring 1994

Figure 4-13

05-10-04 S:GIS/Projects/040190/Corel/Figure 4-12.cdr

Groundwater contours developed for the spring of 2000 continue to show a general east-west flow direction with recharge occurring between the Stanislaus and Tuolumne Rivers (Burow et al. 2004). The contours show that the Tuolumne River and portions of the Stanislaus River near Oakdale are gaining streams. However, the detail of the graphic does not allow conclusions to be drawn about the city of Modesto's effects on the river. South of Riverbank, the Stanislaus River does not appear to be affecting groundwater levels by either mounding groundwater, indicating recharge, or draining groundwater, indicating discharge to the river. The recharge and discharge areas may change seasonally.

4.2.5 Groundwater Recharge and Discharge Areas

Groundwater recharge to the shallow aquifer occurs from precipitation, applied water, and seasonally from infiltration from the rivers. The forebay also contributes water horizontally to the shallow aquifer. Subsurface recharge may also occur from adjacent subbasins if groundwater gradients are lower in the Modesto subbasin.

Groundwater recharge to the deep aquifer is from the shallow aquifer as a result of vertical seepage across the Corcoran clay and horizontally from the forebay aquifers. Groundwater can also exchange between the shallow and deep aquifers in wells with screens in both aquifers.

Groundwater recharges the forebay aquifers from precipitation, applied water, and infiltration from the rivers. Groundwater migrates both vertically and horizontally through the sediments. The coarse gravel at the base of the forebay aquifers is exposed at the ground surface, parallel to the western surface exposure of the Mehrten Formation sediments shown on Figure 4-5. The gravels are exposed along an approximately two-mile-wide area. The gravel bed appears to extend beneath and is probably connected to the sediments in the Stanislaus River. Unlined canals that cross this belt also likely provide additional recharge. North of the Stanislaus River and near the Tuolumne River, this gravel belt is poorly defined and needs further definition by a thorough review of well logs or through the USGS database.

Groundwater recharge to the Mehrten Formation confined aquifers is from areas between the eastern and western exposure of the Mehrten Formation, as shown on Figure 4-7. For the most part, the recharge is limited to seasonal precipitation that falls directly on the exposed aquifers. Some recharge is likely occurring where the Stanislaus and Tuolumne Rivers cross the aquifers. Recharge also probably occurs from the Modesto and the Woodward Reservoirs.

The groundwater contours show that groundwater recharge areas are in the eastern and central portions of the subbasin between the Stanislaus and Tuolumne Rivers. The Stanislaus River provides recharge to the forebay aquifers east of Salida. The Tuolumne River also provides recharge to the forebay aquifers near the cities of Modesto and Empire. For the most part, groundwater discharges to the Tuolumne River and locally controls groundwater levels. Portions of the upper reaches of the Stanislaus River may change from a recharge

source to a discharge source during wet years. Increased groundwater pumping and the corresponding lowering groundwater levels may result in increased recharge of the basin by the rivers. This induced groundwater recharge may continue until an equilibrium condition has been established.

Groundwater recharge based on estimated land use and applied water indicates the highest recharge rates occur in the agricultural areas, which are in the central and western part of the basin (Burow et al. 2004). This water would recharge the shallow aquifers and portions of the forebay aquifers, which contribute water to both the shallow and deep aquifers. There is insufficient data to determine the relative amounts of discharge (outflow) from the subbasin. Outflow likely occurs along the San Joaquin River and lower portions of the Tuolumne and Stanislaus Rivers. The outflow would be from the shallow aquifers. Along these discharge areas, groundwater levels need to be maintained at levels that allow the discharge to the rivers to continue. This will prevent the accumulation of salts within the subbasin and prevent poor quality water from the San Joaquin River and water west of the river from intruding into the subbasin.

4.2.6 Hydraulic Characteristics

The hydraulic characteristics of sediments and aquifers are data that provide the foundation for predicting the effects of management options before their implementation. They are basic scientific parameters used to estimate and predict the speed and direction of groundwater movement, groundwater storage, and the potential effects of groundwater pumping on groundwater levels and other wells. These characteristics can be used to answer a number of questions: how should wells be spaced to avoid conflicts; how will the aquifers react to a reduction in recharge resulting from conservation measures; how much water should be removed (in areas with high groundwater table) to lower water levels to benefit agriculture; how much water will a well produce; and how will water quality be affected by the mixing of water from different sources.

The hydraulic characteristics of sediments and aquifers use several terms to quantify the ability to store and transmit water. The *hydraulic conductivity* is the ability of the sediments to transmit water in sediments. *Transmissivity*, a term applied to aquifers, is the hydraulic conductivity multiplied by the thickness of the sediments capable of conveying water. All sediments have some void space between the particles; this void space is reported as *porosity*. Water in the void spaces cannot be entirely removed. The *storage coefficient* is the percentage of water that can be removed from the pores by gravity drainage and is applied when describing unconfined aquifers. *Storativity* is similar to storage coefficient, but is the percentage of water that can be released from the pores by a decrease in pressure. Storativity is used when referring to semi-confined or confined aquifers.

In the eastern portion of the area, consolidated sediments (Ione, Valley Springs, and Mehrten Formations) are exposed on the ground surface. Because of the compact nature of their

sandstone and conglomerate, an overall clay matrix, and fine ash, sediments of the Ione and Valley Springs Formations result in small-yielding aquifers. No large irrigation wells were found in the Ione Formation in the subbasin (Page and Balding 1973). It is likely the Mehrten Formation will also produce small-yielding wells in this area because the saturated thickness may be small because the formation laps up onto the Valley Springs Formation and the recharge to the area is from limited sources.

The Mehrten Formation underlies and is part of both the forebay and confined aquifer systems. Coarse-grained sediments are present in the upper portions of the formation. Wells drilled into the formation produce about 300 to 2,800 gallons per minute (gpm). The hydraulic conductivities ranged from 0.01 to about 67 feet per day (Page and Balding 1973). Transmissivities in the northeastern portion of the study area range from about 11,000 to 32,000 gallons per day per foot (gpd/ft).

The shallow and forebay aquifers (unconfined to semi-confined aquifer) yield large amounts of water to wells, with an average yield of 1,900 gpm reported for 96 large-capacity wells (Page and Balding 1973). Transmissivities above or east of the Corcoran clay range between 60,000 and 80,000 gpd/ft. The specific yield or storage coefficient for the shallow aquifer is estimated to be about 7 to 17 percent (Johnson 1967).

The deep aquifer has a transmissivity of about 28,000 to 35,000 gpd/ft (Page and Balding 1973). The storativity is estimated to be on the order of 0.0001 to 0.000001 (unitless).

The Corcoran clay is a regional layer that restricts movement between the shallow and intermediate aquifers and the underlying deep aquifer. Because the clay is permeable to some degree, water can migrate vertically through the layer but typically at very slow rates. Although this migration rate is very slow, the amount of water moving through the clay can be significant, given the large area covered by the clay and head differences across the clay. No test data are available for the Corcoran clay, but some groundwater models have "backed into" what appear to be reasonable permeability values. The vertical permeability estimated ranged from 0.01 to 0.007 feet per day (Burow et al. 2004). The Corcoran clay's ability to act as a regional aquitard is uncertain because of the large number of wells. The gravel pack surrounding the wells and the wells themselves act to connect the shallow aquifer with the deep aquifer (Page and Balding 1973).

4.3 Groundwater Quality

Groundwater in the Modesto Subbasin is for the most part of good quality. Locally, some problem constituents include total dissolved solids (TDS), nitrates, radionuclides, dibromochloropropane (DBCP), and volatile organic compounds (VOCs). In addition to these constituents, localized areas of man-made contamination (gasoline, solvents, etc.) are present. The following sections discuss these problem constituents, contamination, and their relationship to the aquifers and sediments.

4.3.1 Total Dissolved Solids

TDS is a measure of the amount of salts in the water (typically obtained by evaporating the water and weighing the remaining salts). Electrical conductivity (EC) is also a measure of the salts in the water but uses the water's ability to pass an electric current. The TDS of water can be approximated by multiplying the EC by 0.55 to 0.70 (Hem 1989).

Salts are a concern for both potable and agricultural users. Salt-tolerance thresholds for permanent and vegetable crops may be as low as 600 milligrams per liter (mg/L). Drinking water standards provide recommended maximum contaminant levels (MCLs) of 500 mg/L. An upper limit of 1,000 mg/L is allowed if it is not reasonable or feasible to supply water with levels less than 500 mg/L. TDS concentrations in most wells in the subbasin are low and suitable for potable or agricultural use.

The entire Modesto Subbasin is underlain by saline water. The base of fresh water is the boundary between water of specific conductance greater than or less than 3,000 micromhos per centimeter (µmhos/cm) (a TDS of about 2,000 mg/L). In the Modesto Subbasin, the mapped base of fresh water ranges from about 200 feet bgs in the eastern part of the study area where the Mehrten Formation is shallow, to depths of 700 feet beneath the western part of the city of Modesto, and to depths of 400 feet bgs near the confluence of the Stanislaus and San Joaquin Rivers (Page 1973).

High salinity water may also be present in Ione Formation sediments exposed on the ground surface in the eastern portion of the subbasin. It appears saline waters may be present at relatively shallow depths beneath Waterford.

TDS concentrations in most wells in the forebay aquifers are low and the water is suitable for potable or agricultural use. Figure 4-14 shows the distribution of concentrations in the subbasin. However, two MID wells in the forebay area (wells 3S/10E-26 and 27) have TDS measurements of 1,300 to 1,700 mg/L. Several wells near the town of Empire also have TDS concentrations greater than 500 mg/L but less than 1,000 mg/L. Two wells near Waterford also have reported high TDS levels of about 1,700 mg/L and 8,300 mg/L. Well construction details were not available to assess the potential source of the poor quality water. It is possible that the wells penetrated the Ione or Valley Springs Formations or that the poor water quality is associated with wastewater disposal. Evaporation also may concentrate salts in discharge areas.

Water quality data indicate that near Modesto, water from the shallow aquifer (above the Corcoran clay) typically has TDS concentrations less than 500 mg/L (Page 1972).

Groundwater from the deep aquifer locally may contain TDS concentrations greater than 500 mg/L. Wells that are screened in both the shallow and deep aquifers typically have TDS concentrations greater than 500 mg/L, suggesting that the deep aquifer may be the source of

Legend

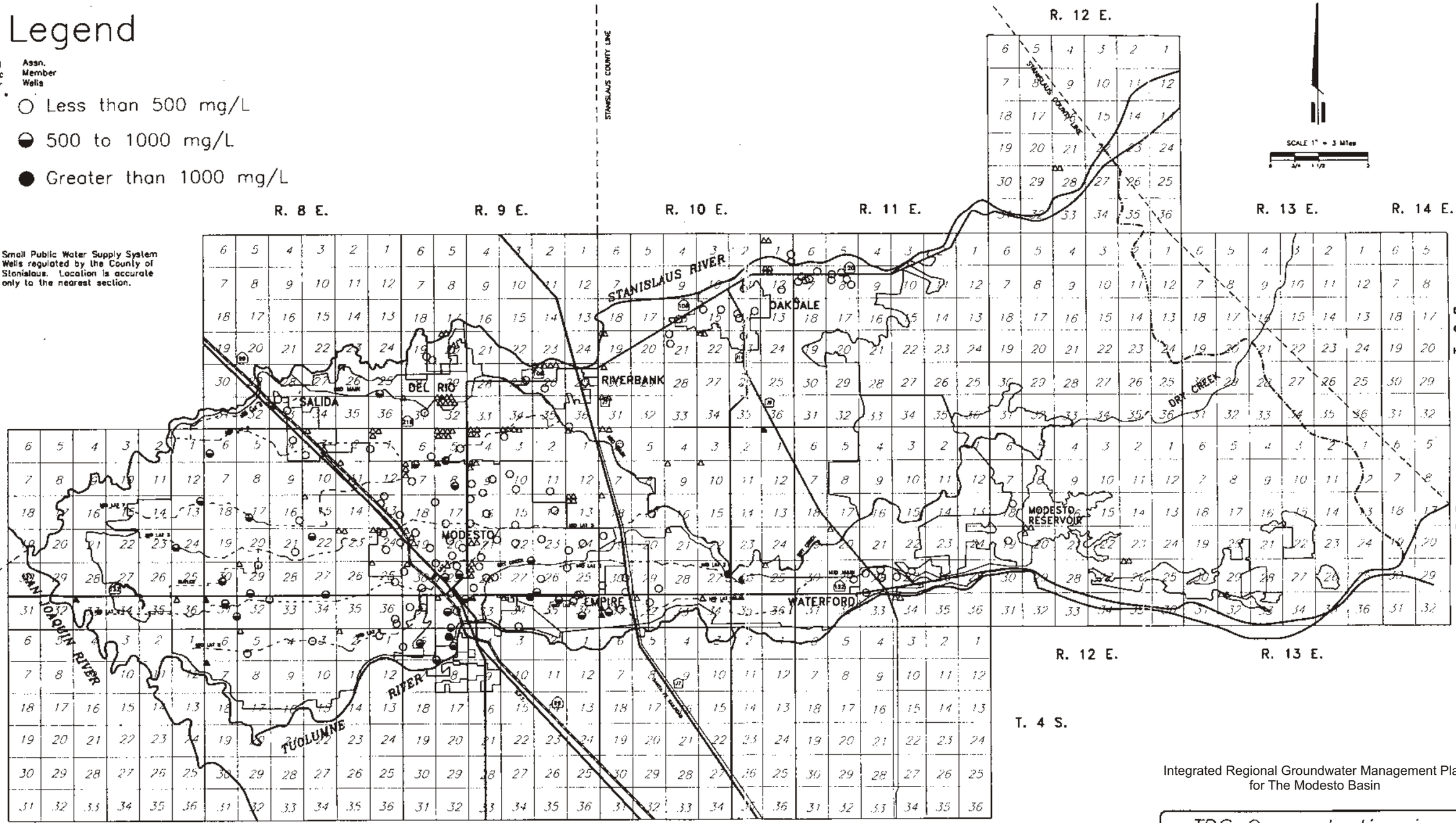
Small Public Water Wells • | Assn. Member Wells

△ ○ Less than 500 mg/L

▲ ◒ 500 to 1000 mg/L

▲ ● Greater than 1000 mg/L

• Small Public Water Supply System Wells regulated by the County of Stanislaus. Location is accurate only to the nearest section.



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TDS Concentration in Water Wells

Figure 4-14

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the higher salinity water. There also appears to be a geochemical signature that could be used to identify water from the deep aquifer, because chloride concentrations increase significantly in those wells that penetrate below the Corcoran clay. Although there appears to be a regionally downward gradient, it is possible that extended pumping within the deep aquifer could locally create an upward gradient that would allow saline water from below to upwell into the aquifer.

Increased groundwater pumping from the 1970s through 1990 has caused the net recharge of salt to be less than the net discharge (MID 1996). The response of the groundwater system to the increased pumping has been a decline in water levels and a slow decrease in salt discharge from the groundwater system to the rivers. Further work is needed to better understand and quantify the spatial and temporal variabilities in salinity and water quality in the Modesto Subbasin and the process affecting water quality. When it is calibrated, the USGS's groundwater flow model for the Modesto Subbasin could provide valuable salinity and water quality information.

4.3.2 Chloride

Chloride is a naturally occurring salt. Concentrations in excess of 100 mg/L can be harmful to plants. Drinking water standards have established a secondary MCL of 250 mg/L.

For the most part, chloride concentrations between 1959 and 1970 were below 100 mg/L in the shallow groundwater (Page and Balding 1973). Figure 4-15 shows the chloride concentrations in the area. One area west of Highway 99 and one area near Waterford had chloride concentrations that exceeded 100 mg/L. Only one well, located in the city of Modesto, exceeded the drinking water MCL. This well was screened both above and below the Corcoran clay. Two other wells in the city also had chloride concentrations that exceeded the MCL between 1970 and 1971 (Page 1972). One of these wells extends below the Corcoran clay. Test hole data from the City of Modesto show that chloride concentrations increase with depth, with concentrations exceeding the MCL at a depth of about 250 feet bgs.

Short-term, recent data from MID show chloride concentrations are variable and do not appear to be increasing in the area. Seasonal pumping may affect the concentrations produced. Figure 4-16 shows these seasonal variations. Figure 4-17 shows the well locations.

Sources of chloride may be from industrial wastewater, a shallow or intermediate source zone of sodium chloride water, the Tuolumne River, an upward flow from the underlying saline water body, or a buried flowing well tapping that body (Page 1972). Historically, improperly destroyed gas exploration wells with artesian conditions have discharged high TDS and chloride water to the Tuolumne River. Also, drill cuttings and mud from the drilling operations could be sources of chloride, sodium, and TDS. Figure 4-17 shows the locations of these wells (California Department of Conservation 2002).

Groundwater with elevated nitrate concentrations also tends to show an increase in chloride. Sulfate also increases, but to a lesser extent. Groundwater underlying agricultural areas may be expected to have higher salinity due to deep percolation of applied water and other agricultural activities. The affected water is characterized by increased concentrations of chloride and sulfate that result from the leaching of nitrogen and potash fertilizers and other agriculture-related compounds and from increased evaporation as groundwater is pumped and reapplied for irrigation.

4.3.3 Sodium

Sodium is a naturally occurring salt. Concentrations exceeding 69 mg/L can be harmful to plants. The secondary drinking water MCL for sodium is 250 mg/L.

Generally, most wells east of Highway 99 have concentrations below the MCL. Concentrations are typically higher in wells with high TDS concentrations. The sources of sodium are similar to those identified for chloride.

4.3.4 Nitrate

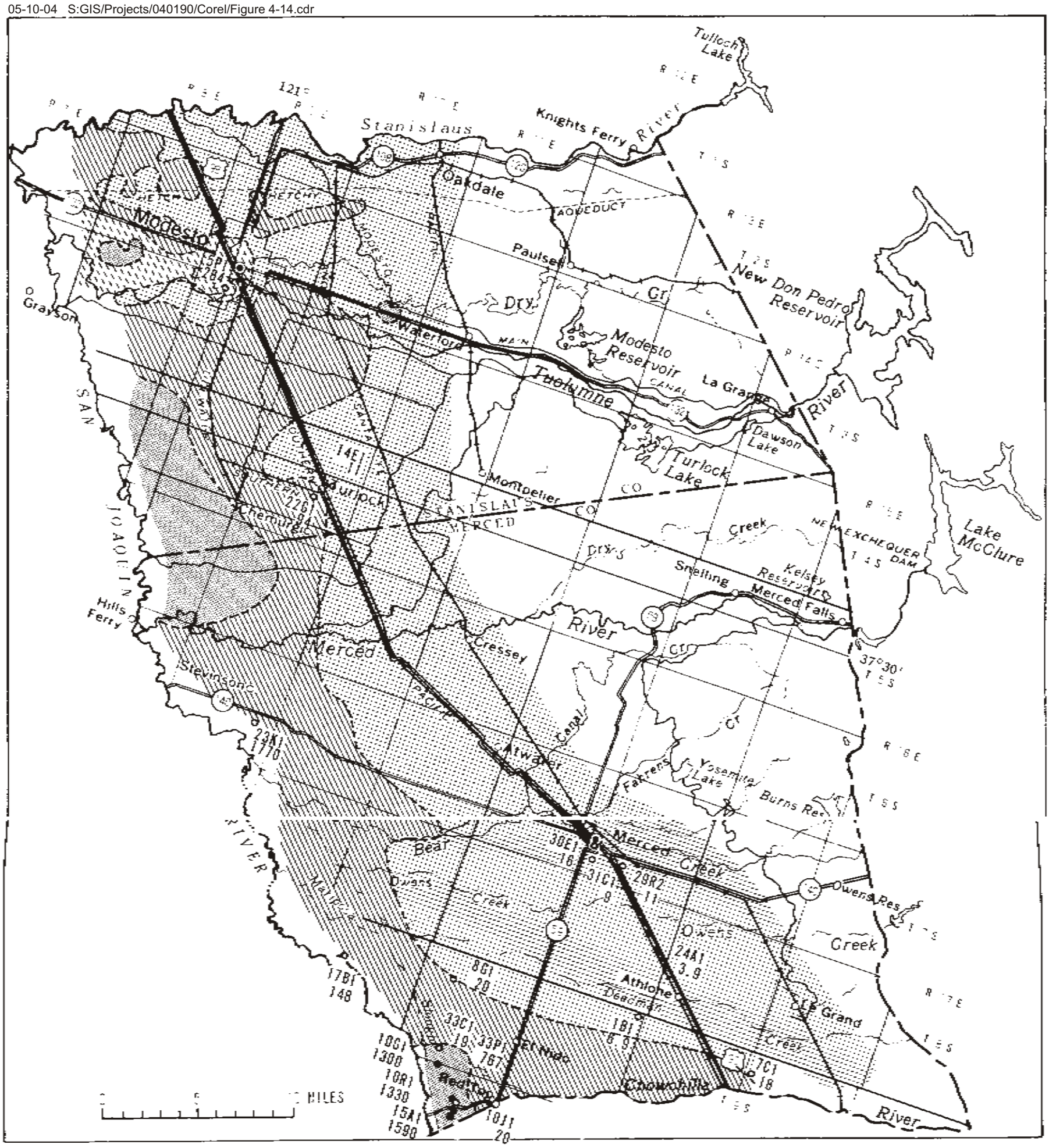
Nitrate is an essential element for plant growth. However, some permanent crops, including grapes, may be adversely affected by excess nitrate. High nitrate levels are also detrimental to human health. Drinking water standards establish 45 mg/L nitrate (as nitrate) or 10 mg/L when nitrate is reported as nitrogen as the MCL.

Nitrate concentrations in most wells in the subbasin are below the MCL for drinking water. Between 1959 and 1970, only one well in the area, located just south of the Tuolumne River, exceeded the MCL (Page and Balding 1973). Most of the shallow aquifer area contained water with concentrations between 10 to 20 mg/L. Concentrations in a few areas exceeded 20 mg/L. Most of the forebay area had concentrations less than 10 mg/L. Concentrations in the groundwater from the deep aquifer were less than 1 mg/L. Figure 4-18 shows the distribution of the nitrate concentrations. Figure 4-17 shows the location of these wells.

By 1990, nitrate concentrations in most of the shallow aquifer area west of Highway 99 had increased to more than 22 mg/L. Figure 4-19 shows the 1990 nitrate concentrations. A large zone of nitrate concentrations ranging from 64 to 96 mg/L was found in seven wells in this area. A second zone of nitrate concentrations exceeding the MCL was present beneath southwestern Modesto. Most of this high nitrate area coincides with Modesto's former sewage effluent disposal area. Six other wells in north Modesto also had concentrations exceeding the MCL.

Nitrate in the forebay area was below the MCL in 1990, except for very high nitrate concentrations (243 to 275 mg/L) in water from wells 3S/10E-26 and 3S/10E-27. The TDS concentrations in these wells also exceeded 1,000 mg/L. Because nitrate is present with the high TDS, it is possible that the source may be related to wastewater disposal.

05-10-04 S:GIS/Projects/040190/Corel/Figure 4-14.cdr



Base from U.S. Geological Survey map of North and South Halves of State of California, 1:500,000; 1970

EXPLANATION

Chloride, in milligrams per liter

< 20 | 21-40 | 41-100 | > 100

10G1
● 1300
Wells in which chloride concentrations are 250 milligrams per liter or more
Upper figure is well number; lower figure is chloride concentration

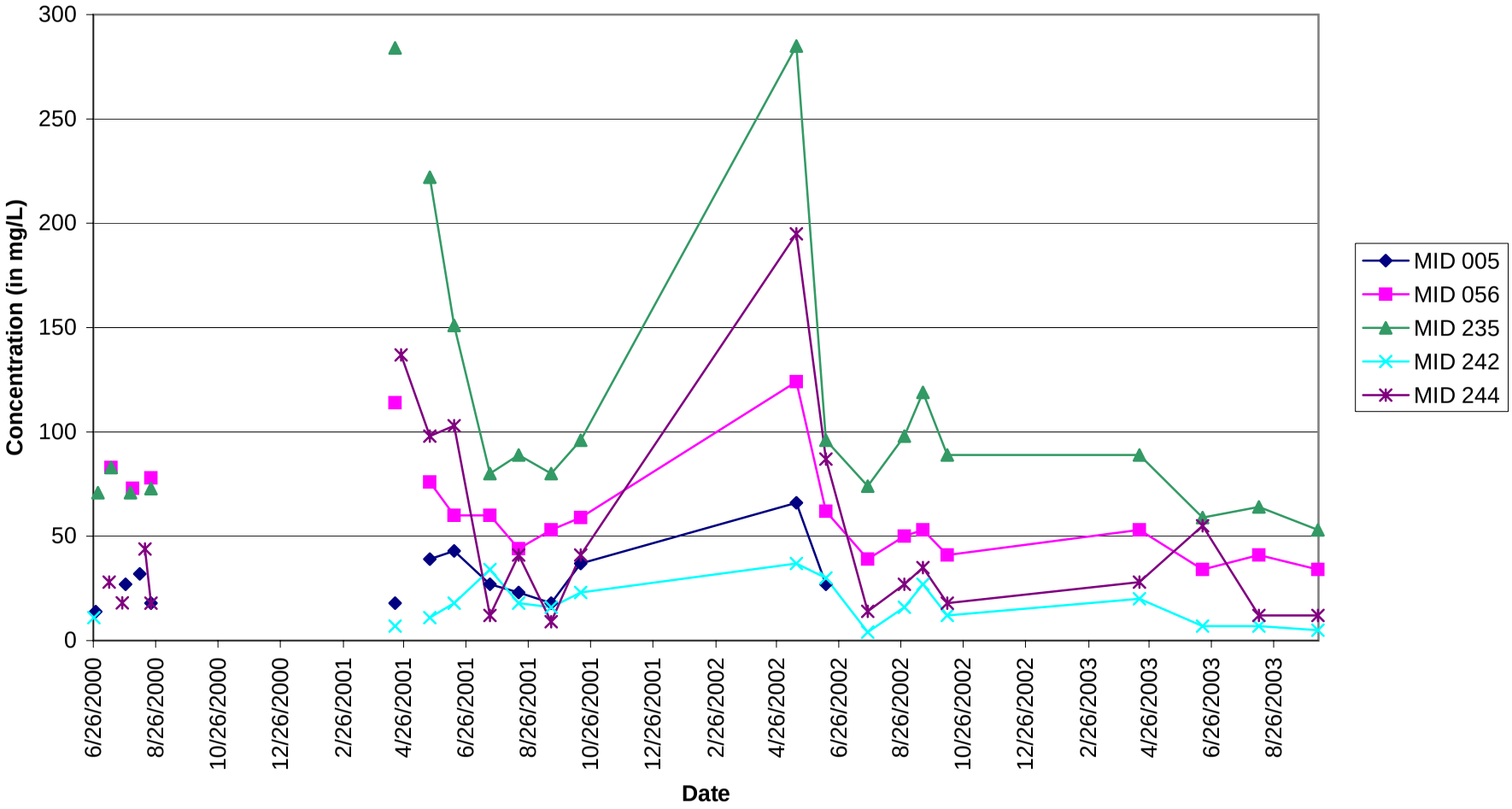
30E1
○ 16
Wells yielding water from only the confined water body
Upper figure is well number; lower figure is chloride concentration

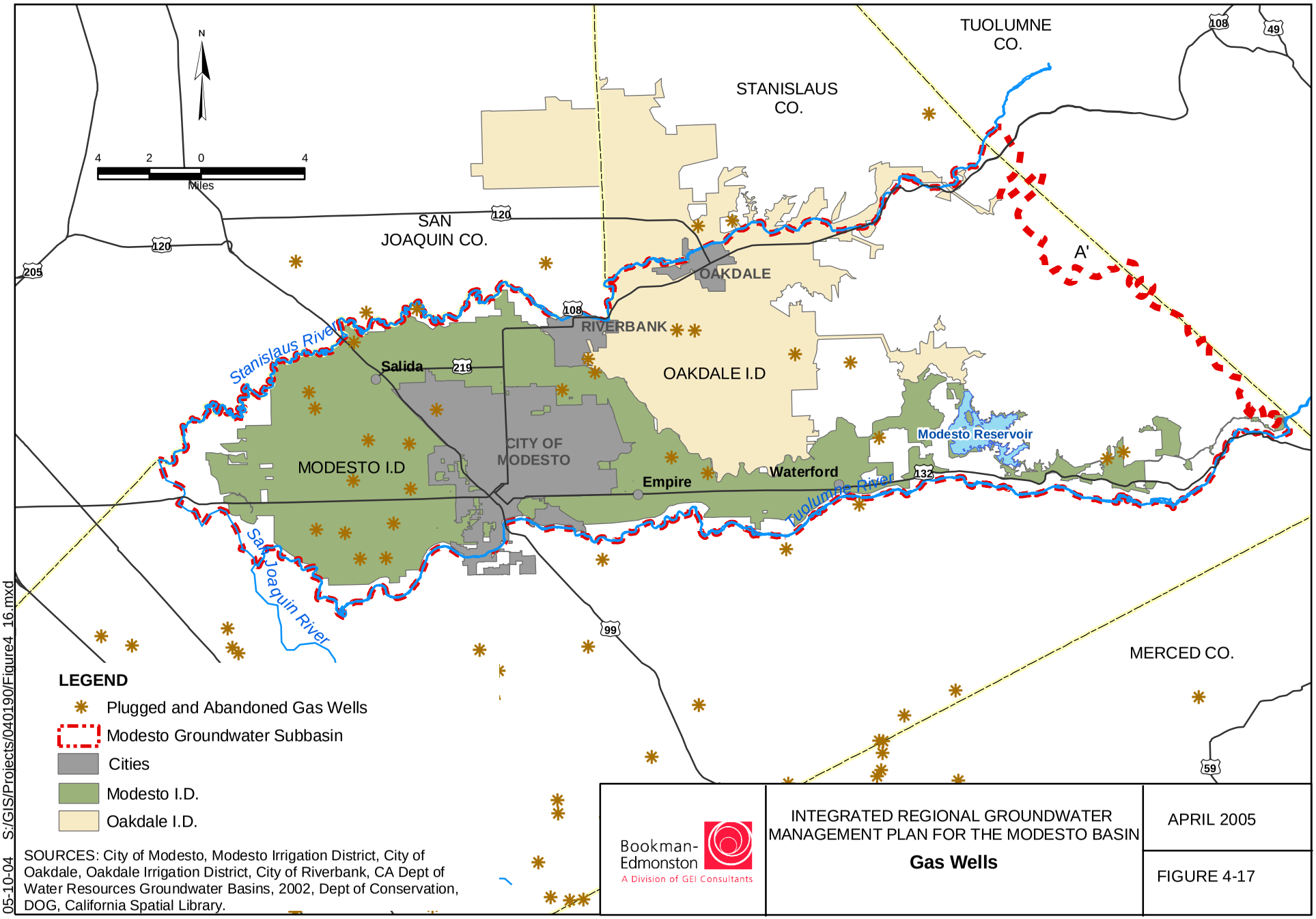
Integrated Regional Groundwater Management Plan
for The Modesto Basin

Chloride concentrations in the unconfined water body, with selected concentrations shown in the confined water body, 1959-70.

Figure 4-15

Figure 4-16
Integrated Regional Groundwater Management Plan for the Modesto Basin
SEASONAL VARIATIONS IN CHLORIDE CONCENTRATIONS




N
4 2 0 4
Miles
TUOLUMNE CO.
STANISLAUS CO.
SAN JOAQUIN CO.
MERCED CO.
A'
OAKDALE
RIVERBANK
OAKDALE I.D
Salida
CITY OF MODESTO
MODESTO I.D
Empire
Waterford
Modesto Reservoir
Stanislaus River
San Joaquin River
Tuolumne River
120
205
108
49
219
99
132
59
LEGEND
Plugged and Abandoned Gas Wells
Modesto Groundwater Subbasin
Cities
Modesto I.D.
Oakdale I.D.
SOURCES: City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, CA Dept of Water Resources Groundwater Basins, 2002, Dept of Conservation, DOG, California Spatial Library.
Bookman-Edmonston
A Division of GEI Consultants
INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN
Gas Wells
APRIL 2005
FIGURE 4-17
05-10-04 S:/GIS/Projects/040190/Figure4_16.mxd

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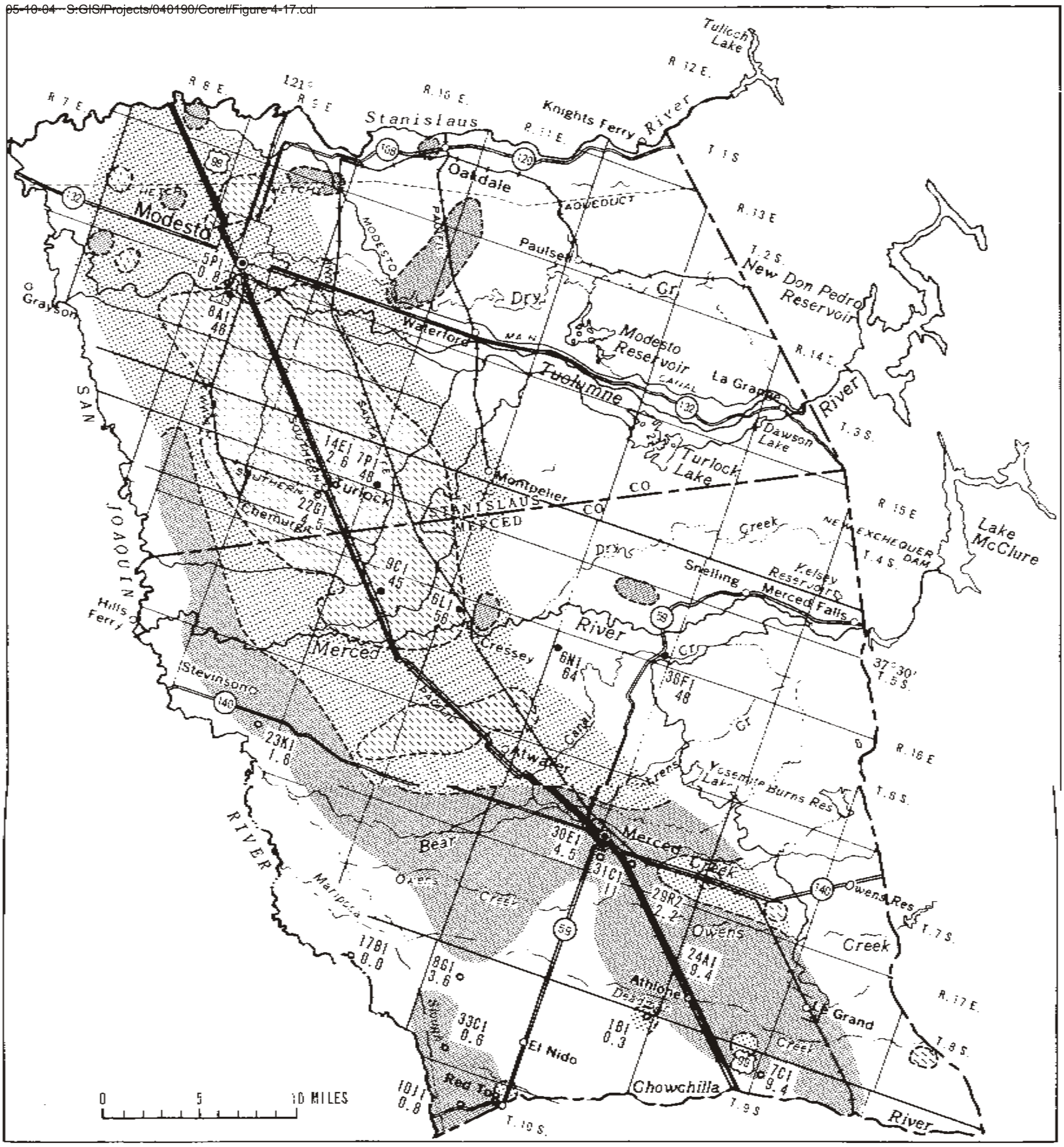


Integrated Regional Groundwater Management Plan for
The Modesto Basin

Distribution of Nitrate Concentrations

Nitrate concentrations in the unconfined water body, with selected concentrations shown in the confined water body, 1959-70.

Figure 4-18

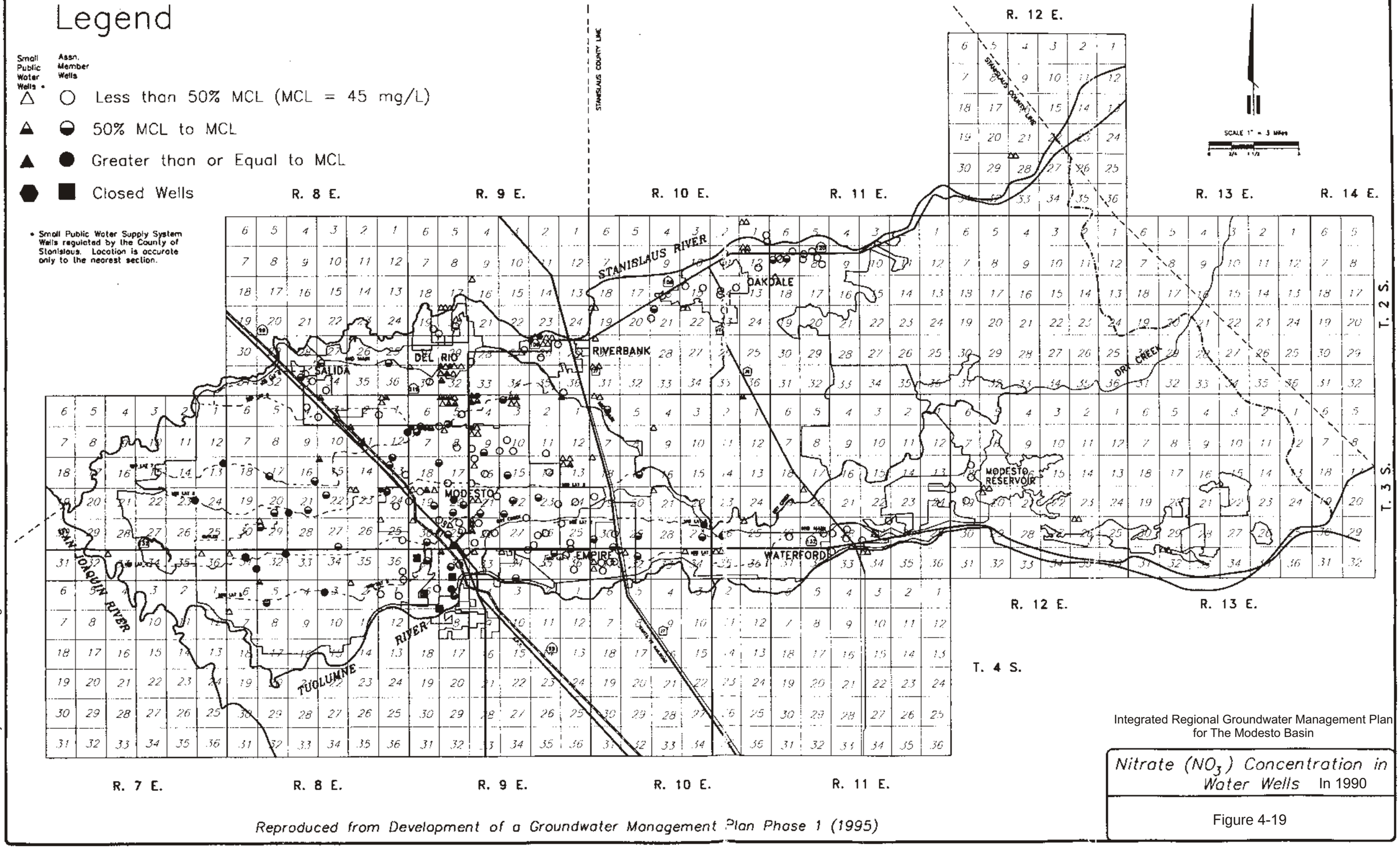
Legend

Small Public Water Wells *

Assn. Member Wells

- △ ○ Less than 50% MCL (MCL = 45 mg/L)
- ▲ ◒ 50% MCL to MCL
- ▲ ● Greater than or Equal to MCL
- ⬟ ■ Closed Wells

* Small Public Water Supply System Wells regulated by the County of Stanislaus. Location is accurate only to the nearest section.



Reproduced from Development of a Groundwater Management Plan Phase 1 (1995)

Integrated Regional Groundwater Management Plan for The Modesto Basin

Nitrate (NO_3) Concentration in Water Wells In 1990

Figure 4-19

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There is insufficient information to assess the nitrate concentrations in the deep aquifer at this time.

Future concentrations of nitrate in the area may potentially increase. Water quality samples collected from 2000 through 2003 show a slow increase in nitrate concentrations (MID 2004). Figure 4-20 shows results for several MID wells. The wells obtain water from multiple aquifers so the aquifer with the nitrate cannot be identified at this time. More data are needed to establish any definite trend in nitrate concentrations in the basin.

Nitrate concentrations generally decrease with depth because in the recharge areas, groundwater that is deeper in the flow system is generally older. There is a positive correlation between dissolved oxygen and nitrate concentration. Most of the water in the Modesto subbasin is oxic, containing oxygen. Well-oxygenated groundwater likely occurs in areas where the water rapidly infiltrates through coarse-grained sediments. Additional data are necessary to resolve which aquifers contain nitrate and the natural degradation processes that affect its concentrations.

4.3.5 Iron and Manganese

Iron and manganese are common elements in sediments and are essential nutrients for humans and plants. An upper limit has not been established for plants. A secondary MCL of 0.3 mg/L for iron and 0.05 mg/L for manganese has been established for drinking water.

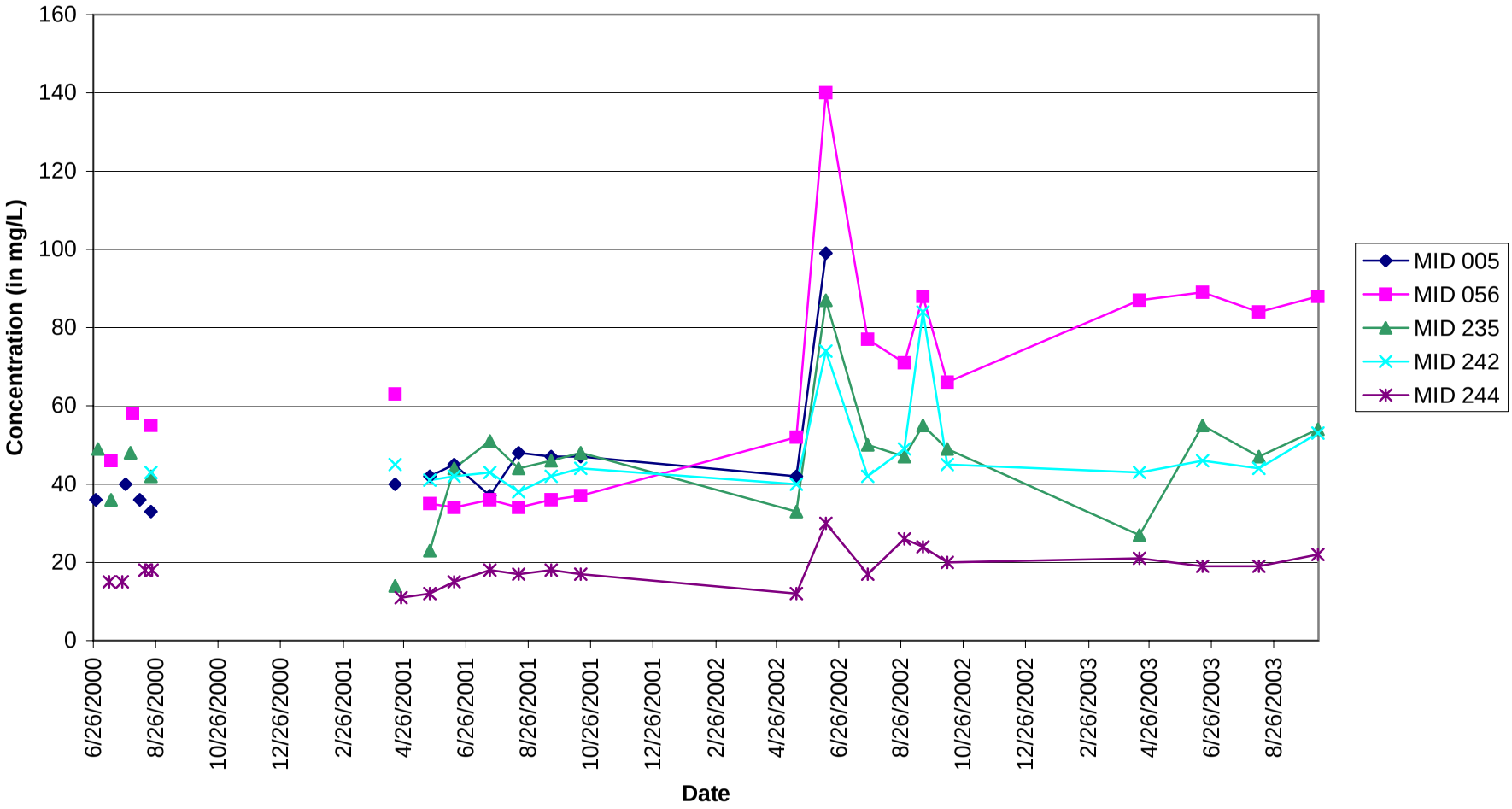
Groundwater in the western part of the subbasin near the San Joaquin River frequently has high concentrations of naturally occurring iron (MID 1996). Deeper groundwater is also found to have elevated levels of iron and manganese. Shallow groundwater near streams often shows high levels of manganese and occasionally high iron concentrations. The City of Modesto has encountered elevated iron and manganese levels in groundwater in a few test holes in eastern and southern Modesto. The Mehrten Formation typically produces water high in manganese.

4.3.6 Arsenic

Arsenic, a naturally occurring element, is used in pesticides and in poultry feed to combat disease. The current primary MCL for drinking water is 50 micrograms per liter (µg/L). The U.S. Environmental Protection Agency has mandated an MCL of 10 µg/L, and California has adopted the revised MCL.

Arsenic concentrations in the City of Riverbank wells, in the forebay aquifer, are typically less than 3 µg/L (City of Riverbank 2003). Similar concentrations are present beneath Oakdale, where the concentrations are less than 2 µg/L (City of Oakdale 2003) and at Waterford, where the concentrations range between 3 to 4 µg/L (City of Modesto 2003). The

Figure 4-20
Integrated Regional Groundwater Management Plan for the Modesto Basin
TRENDS IN NITRATE CONCENTRATIONS



lower concentrations may be the result of the recharge of river water into the aquifers. Arsenic concentrations near Salida are higher, ranging from 7 to 12 µg/L. Concentrations are more variable near Modesto, with levels ranging between non-detectable and 8 µg/L. The wide range may be the result of those wells taking water from two different aquifers, the shallow and deep aquifers. No data were available for the OID service area.

Arsenic is typically associated with elevated pH or some specific geochemical conditions. More data on the distribution of redox parameters and pH in the Modesto basin would help predict where elevated arsenic concentrations would be expected.

4.3.7 Radionuclides

Radioactive decay of certain elements produces radiation. The drinking water MCL for gross alpha, a general measure of the potential for radioactive substances to be in the water, is 15 picocuries per liter. The MCL for uranium is 20 picocuries per liter. If radiological constituents above the MCL are detected, additional testing is required for specific radioactive species. Sampling in the study area for radiological constituents has generally been limited to large public water system wells.

Groundwater with high uranium has been found in parts of Modesto and in Empire. Uranium activities in water from six wells ranged from 20 to 37 picocuries per liter in 1994 (MID 1996). Most of the area with high uranium concentrations is east of Highway 99 and northwest of Dry Creek. In 1994, two other wells in the southern part of this area produced water with alpha activities exceeding the MCL: a well in the Empire area had a uranium activity of 23 picocuries per liter and a small community public water system had uranium above the MCL. More recent data suggest concentrations may be as high as 28 µg/L (City of Modesto 2003).

In the northern portions of the forebay, the radiological concentrations are below the MCLs. The City of Oakdale reports a gross alpha between 0.53 and 1.02 picocuries per liter between 2000 and 2003. In Riverbank, the concentrations of gross alpha range from 0 to 7 picocuries per liter. These lower concentrations may be the result of recharge from the Stanislaus River.

4.3.8 Pesticides

DBCP, a pesticide usually associated with vineyards or orchards, was banned in 1977. The drinking water MCL is 0.2 µg/L.

Water samples collected in 1993 and 1994 detected low levels of DBCP in three localized areas within the subbasin that exceeded the MCL (MID 1996). Figure 4-21 shows sampling locations in the basin. The largest of these areas is between eastern Modesto and Empire and north of the Tuolumne River. The area extends about five to six miles from east to west and about two to three miles from north to south. The concentrations ranged from 0.21 to 0.57 µg/L. A second relatively large area of high DBCP levels is in central Modesto,

primarily northeast of Highway 99. The third area is south of Del Rio, where the DBCP concentrations ranged from about 0.3 to 0.5 µg/L. The DBCP is in the shallow and forebay aquifers.

DBCP concentrations also exceeded the MCL at several scattered wells at different time periods. In the 1990s, DBCP was detected in one well at Salida, in another west of Modesto, and in another in north Modesto. DBCP has also been detected in wells in Waterford and in or near western Modesto but at concentrations below the MCL (MID 1996; City of Modesto 2003).

DBCP concentrations in most wells west of Highway 99 were below 0.01 µg/L. The Riverbank and Oakdale areas have not detected DBCP.

DBCP contamination is present primarily in the shallow groundwater (MID 1996). Positive correlations of nitrate to the occurrence of pesticides indicate that groundwater susceptible to nitrate contamination may also be susceptible to contamination from pesticides (Burow, Stork, and Dubrovsky 1998). Because DBCP is in the forebay and shallow aquifers and the groundwater flow direction is generally to the west, DBCP may migrate in the shallow aquifer west of Highway 99. It is possible that DBCP could enter the deep aquifer because of a downward flow path, pumping in the deep aquifer, and wells that are screened both in the shallow and deep aquifers.

Ethylene dibromide (EDB), another pesticide, has not been detected in groundwater in the area, other than for one unconfirmed incident (MID 1996).

4.3.9 Herbicides

Atrazine, cyanazine, deethylatrazine, diuron, ETPC, metolachloro, and simazine have been detected in domestic and monitoring wells located in almond orchards. Most of these herbicides do not have established drinking water MCLs. Those that do have MCLs are listed in Table 4-1.

Table 4-1
Concentrations of Herbicides in Area Wells

Herbicide	MCL (mg/L)	Concentration (µg/L)	Well Number	Land Use
Atrazine	0.003	0.008 to 0.059	3S/10E-35K1 3S/11E-30K1	Almond Orchard

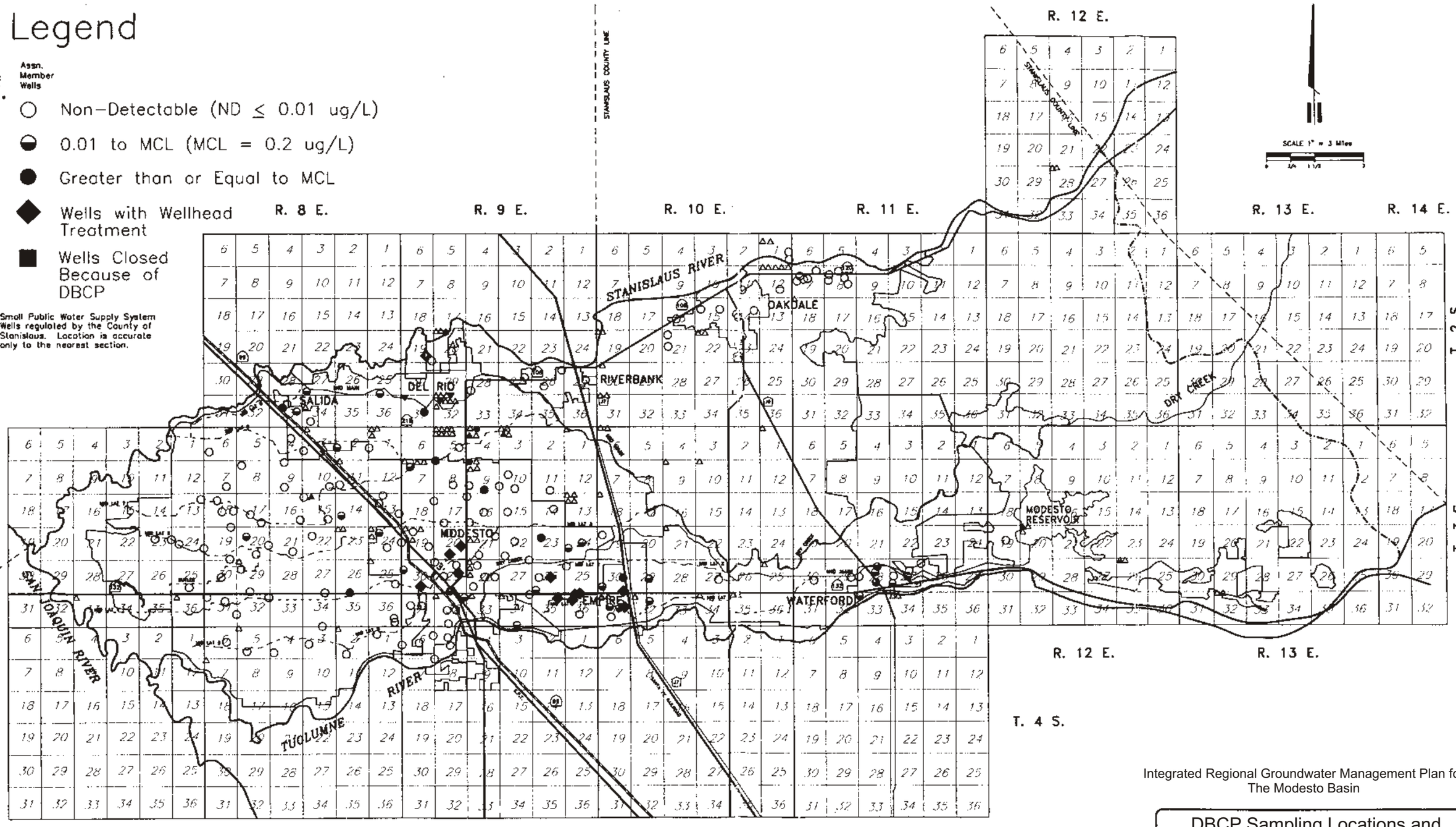
Legend

Small Public Water Wells *

Assn. Member Wells

- △ ○ Non-Detectable (ND ≤ 0.01 ug/L)
- ▲ ◒ 0.01 to MCL (MCL = 0.2 ug/L)
- ▲ ● Greater than or Equal to MCL
- ▼ ◆ Wells with Wellhead Treatment
- ⬢ ■ Wells Closed Because of DBCP

* Small Public Water Supply System Wells regulated by the County of Stanislaus. Location is accurate only to the nearest section.



Integrated Regional Groundwater Management Plan for The Modesto Basin

DBCP Sampling Locations and Concentrations in Water Wells

FIGURE 4-21

05-10-04 S:GIS/Projects/040190/Corel/Figure 4-20.cdr

4.3.10 Volatile Organic Chemicals

VOCs are present in the groundwater near Modesto as the result of industrial activities. VOCs include trichlorofluormethane (freon 11), 1,1,2-trichloro-1,2,2-trifluroethane (freon 113), cis-1,2-dichloroethylene, perchloroethylene (PCE), trichloroethylene (TCE), carbon tetrachloride, disinfection by-products and petroleum fuel products (MID 1996; City of Modesto 2003). Along with these major chemicals are their daughter products, those that have decayed to other compounds. Several of these chemicals have been detected at concentrations above the MCLs, and some have resulted in the closure of municipal supply wells. Water from several wells is being treated.

Although most of the contamination is in the shallow aquifer, there is a potential that, with pumping below the Corcoran clay, contaminants could be pulled into the deep aquifer. There is insufficient information at this time to assess whether contaminants have migrated into the deep aquifer.

The City of Oakdale has not detected VOCs, except for PCE at 1.5 µg/L. No fuel hydrocarbons have been detected. VOCs have not been detected in the water supply wells at Riverbank.

4.3.11 Constituents of Concern

In summary, each of the aquifer systems has water quality problems, as listed below. For the most part, these problems affect only portions of the subbasin. In general, water quality north of the Modesto Subbasin, around the City of Oakdale and Riverbank, is of good quality. The City of Modesto has abandoned some of its wells because of water quality issues. High groundwater levels with high levels of TDS are present in the western portion of the subbasin.

- Shallow Aquifer – TDS, nitrate, DBCP, VOCs (localized to Modesto)
- Deep Aquifer – TDS, VOCs (localized to Modesto)
- Forebay Aquifers – TDS, DBCP, uranium (western part near Modesto and Empire)

Although iron and manganese are present, they can be easily removed by treating the water. Additional testing of the agricultural water supply wells and drainage wells should be performed to fully assess the distribution and concentrations in the area.

Both sodium and chloride are of local concern and are related to the occurrence of TDS. Nitrate and pesticides also have been correlated. Management actions to improve one of these problems will likely resolve multiple constituents.

4.3.12 Groundwater Quality Protection and Improvement

Groundwater quality problems can be managed through source control and managing the groundwater flow to contain the spread of contaminants in the basin. Improving groundwater quality requires long periods of time. Although active treatment systems can be effective in removing contaminants, they have not been discussed in this report.

Sources of TDS, sodium, and chloride include deep percolation from use of water for agriculture, wastewater disposal, naturally occurring water from the Mehrten Formation and below the Corcoran clay, and potentially improperly abandoned or residual wastes from gas wells. Source control can be accomplished by rehabilitating wells. For example, TDS concentrations can be reduced by 100 to 200 mg/L by plugging screen levels in the deep aquifer in wells that obtain water from both the shallow and deep aquifers. Source control may also include an evaluation of each of the gas well sites to assess whether there are artesian flowing conditions or residual wastes. Groundwater flow control can be accomplished by maintaining groundwater outflow to the San Joaquin, Stanislaus, and Tuolumne Rivers.

Nitrate sources may include wastewater from animal facilities, urban and agricultural wastewater disposal, and fertilizers. Wastewater control regulations should be supported, and where necessary, mitigating measures implemented by owners. Fertilizer application rates should be strictly followed. Modification of irrigation methods from flooding of fields to drip or spray irrigation may reduce the potential for nitrate to leach into the aquifers; however, this will reduce recharge. Pumping wells with high nitrate levels and reusing the water on vegetation can improve groundwater quality through groundwater flow control. Vegetation is probably the most effective way to remove nitrate from the water. Fertilizer applications may be reduced when using high nitrate waters. An agricultural laboratory should be consulted.

Source control of DBCP has already been implemented by banning its use. DBCP is moving through the deeper parts of the system and will degrade over time. DBCP may also be concentrated in the soils near product mixing areas, typically near a water source. Source control is to reduce the amount of leaching of the contaminant from the soils. Localized removal of soils with high concentrations may remove the potential source(s) and prevent further leaching into the groundwater. Groundwater control measures need to be implemented to prevent DBCP from spreading into adjacent portions of the aquifers. Reuse of water tainted with DBCP in the area where it is originally present can allow vegetation to remove the product without spreading the contaminants. However, before implementing this option, local regulatory agencies should be consulted to assess the regulatory and liability aspects of this approach.

Uranium is naturally occurring; therefore, source control is limited to identifying its horizontal and vertical extent and preventing its spread into adjacent areas. Anthropogenic activities may enhance its mobility, and therefore, mitigation of those activities may reduce

the uranium. Passive treatment of the groundwater may be possible; installing filtration barriers may be possible, but would need a detailed assessment. Groundwater flow control may be possible and potable use of the water, likely by dilution with treated surface water, is considered a feasible and cost-effective solution.

4.4 Groundwater Use

The Modesto Groundwater Subbasin includes more than 247,000 acres, about 68 percent of which is irrigated agricultural land. Surface water supplies for MID are diverted from the Tuolumne River below La Grange Dam. Surface water supplies for OID are diverted from the Stanislaus River at Goodwin Dam. Both irrigation districts have a network of groundwater supply wells to augment their surface water supplies.

Since 1977, more than 5,000 wells have been completed in the area between the Stanislaus and Merced Rivers, east of the San Joaquin River. The number of domestic wells constructed during the 1970s through the 1990s increased. In contrast, fewer irrigation wells were constructed in the 1980s and 1990s than during the 1970s. These trends may reflect the increase in population and the decrease in irrigated farm acreage in the region (Burow et al. 2004).

The water demand for the Modesto Groundwater Subbasin was estimated at 590,000 acre-feet for water year 2000 (Burow et al. 2004). Surface water deliveries accounted for about 65 percent, or 382,500 acre-feet, of the total water supply. Groundwater accounted for about 35 percent, or about 206,500 acre-feet, of the total supply. Of the approximately 534,000 acre-feet used to meet irrigation demand, 68 percent was surface water and 32 percent was groundwater. Of the approximately 56,000 acre-feet used to meet urban demand, 42 percent was supplied by surface water and 58 percent was supplied by groundwater. Although two-thirds of the wells in the study area are domestic wells, the amount of water pumped has not been quantified.

The following quantities of groundwater are supplied to urban customers:

- City of Riverbank: 3,800 acre-feet during calendar year 2002
- City of Oakdale: 4,600 acre-feet during calendar year 2002
- City of Modesto: about 46,800 acre-feet during calendar year 2003

The total water recharge in the Modesto Groundwater Subbasin was about 310,000 acre-feet. The largest component of recharge is irrigation (57 percent), whereas precipitation in excess of crop requirements accounted for 41 percent of the recharge (Burow et al. 2004). Recharge in the Modesto urban area totaled 20,000 acre-feet, about 7 percent of the total recharge.

The highest recharge rates generally occur in the agricultural areas in the western part of the study area, along the canals north of the Tuolumne River and east of Modesto. The lowest recharge rates generally occur in the eastern part of the study area, in the foothills and adjacent uplands, and in the Modesto urban area. The highest pumpage rates generally occur in the agricultural areas in the western part of the study area (Burow et al. 2004).

The water supply and demand estimates do not estimate the amount of natural recharge along the Stanislaus or Tuolumne Rivers or the amount of discharge from the basin into the Stanislaus, Tuolumne, and San Joaquin Rivers.

Water demands are likely to increase as the area's population increases. The California Department of Finance projected the population would reach 517,600 in 2000 and 670,000 in 2010 (Stanislaus County 1994). Census data for 2000 showed the population had only reached 245,000; therefore, growth is proceeding slower than anticipated (U.S. Census Bureau 2004). The conversion of agricultural lands to urban development may mitigate some of the water demand.

4.5 Summary

Significant basin-wide geologic and hydrogeologic studies have been completed. Information from historic and ongoing studies will be used to focus efforts on resolving uncertainties in the hydrogeologic conditions that govern groundwater movement in the subbasin. Focusing these efforts on limited portions of the subbasin will lead to sound groundwater management options and actions.

Based on only two geologic sections, which do not adequately define the three-dimensional nature of the aquifers, the subbasin contains four aquifers. Three are connected (shallow, deep, and forebay) and the fourth, which underlies all of the others, may be relatively isolated from the effects on the other aquifers. Because the three aquifers are interconnected, changes to water supply or demand in one aquifer will affect the other two aquifers. The vertical and horizontal extents of the shallow aquifer and the deep aquifers are relatively well defined. The bottom of the deep aquifer has been less precisely defined. The deep aquifer likely consists of several geologic formations (Turlock Lake, Laguna, and the upper portions of the Mehrten Formation). Although there may be different names for the geologic units, they likely are hydraulically connected.

Both the shallow and deep aquifers receive water from the forebay aquifers. In profile, the forebay aquifers represent a triangular wedge that thickens towards the west and thins towards the east. This conceptual picture is based on one geologic section drawn east-west about halfway between the Stanislaus and Tuolumne Rivers. The section showed a gravel bed that coincides with the Mehrten Formation's western exposure at ground surface. Used by most wells, this gravel occurs to about the center of Modesto and could convey significant amounts of water into the central portion of the subbasin. Because it is exposed on the

ground surface, it can be readily recharged. The gravel bed could be part of the Mehrten Formation because it has a dip of about 0.006 feet per foot and at one location the gravel is overlain by "lava" ("lava" or breccias are commonly associated with the Mehrten Formation). The gravel bed described above is not present in all wells. This is likely the result of historic topography in which the gravels were deposited in valleys but not on the low surrounding hills. The sediments in these hills are more of the typical claystone with thin-bedded sands. Overlying the Mehrten Formation sediments are younger sediments of the Turlock Lake, Riverbank, and Modesto Formations and Holocene alluvium. These sediments were laid down horizontally (or at a slight dip). The dipping sediments of the Mehrten Formation, therefore, will abut these younger sediments and allow water to be conveyed from the younger sediments into the upper Mehrten Formation sediments. The younger sediments act as a reservoir to feed the upper Mehrten Formation aquifers.

The horizontal extent of the gravel bed is poorly defined. It appears to extend from about the Stanislaus River to just north of the Tuolumne River. A few well logs from north of the Stanislaus River show gravel at about the right depth, suggesting this marker bed for the forebay aquifers may be present in this area but has not yet been fully defined. Further definition of the extent of this gravel bed is needed to identify potential recharge areas.

Underlying the three aquifers are the Mehrten Formation confined aquifers. These aquifers are locally separated from the overlying aquifers by a 60- to 120-foot clay layer. It is possible that the clay has been locally eroded and may allow some interconnectedness of the aquifers, but the current level of information is insufficient to identify those areas. There is currently insufficient information to confirm that the confined Mehrten Formation aquifers are indeed hydraulically separated from the overlying aquifers.

The Mehrten Formation confined aquifers conceptually differ greatly from the three other aquifers. Because the younger sediments are not resting over the aquifers and acting as a reservoir, these aquifers receive only local and seasonal recharge. Local recharge to the confined aquifers is likely derived from the Modesto and Woodward Reservoirs and from the area where the Stanislaus and Tuolumne Rivers cut across the surface exposure of the Mehrten Formation. Between these recharge sources, there will be limited seasonal recharge by rain. Groundwater levels between these sources will likely have the greatest changes. At some depth, the Mehrten Formation confined aquifers are likely to contain ancient water that has higher TDS concentrations.

All of the City of Oakdale wells, most of the OID wells, and some of the MID wells use these Mehrten Formation confined aquifers. Because recharge is limited, this aquifer needs careful monitoring. Groundwater levels are currently declining about one foot per year, according to the City of Oakdale and hydrographs from the DWR. Groundwater recharge efforts in the forebay aquifers will not have a significant benefit on the Mehrten Formation confined aquifers.

Many of the OID and MID wells are screened in both the forebay and Mehrten Formation confined aquifers. Because sediments in the forebay aquifers have a higher hydraulic conductivity, most of the water pumped from the wells will be derived from these aquifers. However, the forebay aquifers thin to the east and as such will experience the greatest changes in water levels. Increasing the groundwater gradient by pumping wells in the shallow and deep aquifers can easily increase the drawdown. The saturated thickness is directly related to the yield of the wells. When the yield from the forebay aquifers is diminished, greater amounts of water will be obtained from the Mehrten Formation confined aquifers. Most of the current groundwater level monitoring is done in production wells, and because most wells are screened in both aquifers, there is little definition of the groundwater levels and conditions in the forebay aquifers. Groundwater monitoring needs to be improved in the eastern extent of the forebay aquifers to assess the conditions and changes that may occur.

Based on the conceptual understanding of the geology and aquifers, we recommend that the following actions be undertaken to secure a more complete understanding of the hydrogeology.

Issue	Action
▪ Eastern extent of forebay aquifers poorly defined.	▪ Obtain well logs from DWR to prepare additional east-west geologic sections north of the Stanislaus River and near the Tuolumne River.
▪ Monitoring of the forebay aquifers is insufficient where they thin and the greatest changes in water levels may occur.	▪ Review well logs from DWR to identify wells with screens only in the forebay aquifers. Contact well owners to participate in groundwater level monitoring. Where necessary, construct additional monitoring wells.
▪ There is insufficient monitoring along the Stanislaus and Tuolumne Rivers to assess the surface water-to-aquifer interactions. Most wells being monitored are at depths well below the invert of the river.	▪ Review Regional Water Quality Control Board records to assess shallow wells that could provide groundwater gradients near the rivers.
▪ Insufficient monitoring in the Mehrten Formation confined aquifers as most OID wells are screened in both the Mehrten Formation and forebay aquifers.	▪ Review well logs from DWR to identify wells with screens only in the Mehrten Formation confined aquifers. Contact well owners to participate in groundwater level monitoring. Where necessary, construct additional

Issue	Action
	monitoring wells.
▪ Mehrten Formation confined aquifer recharge areas are poorly defined.	▪ Locate significant sand or gravel beds from well logs and project their occurrence to ground surface. Confirm the projections by drilling test holes for sediment types.
▪ Groundwater flow directions are poorly defined, and therefore, interpretations of recharge and discharge areas and of the interactions between aquifers may change greatly.	▪ Implement the groundwater monitoring plan (see Appendix D). A hydrogeologist should interpret the data and prepare groundwater contour maps. Identify uncertainties, refine the monitoring network, and propose resolution to improve the interpretations.
▪ The recharge areas and the interaction between the forebay and Mehrten Formation confined aquifers are poorly defined.	▪ Conduct oxygen isotope analysis on selected wells in the forebay and Mehrten Formation wells. Supplement where needed with tritium analysis.
▪ The full extent of the 20- to 40-foot gravel layer needs to be explored for potential recharge possibilities and beneficiaries.	▪ Conduct a review of well logs in the area for gravel beds.
▪ Outflow from the basin is poorly understood and needs to be maintained to prevent salt buildup.	▪ Implement monitoring program. Use results to position new monitoring wells.
▪ Drilling of new City production wells within the study area has the potential to yield new and important data, but is not currently being coordinated.	▪ Review well drillings while they are being taken.

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5 Groundwater Management Plan

5.1 Definition of Groundwater Basin and Map of Groundwater Basin and Subareas

This regional management plan covers the entire Modesto Subbasin and part of the Eastern San Joaquin Subbasin. DWR Bulletin 118 defines these basins as follows:

- The Modesto Subbasin lies between the Stanislaus River to the north and Tuolumne River to the south and between the San Joaquin River on the west and crystalline basement rock of the Sierra Nevada foothills on the east. The northern, western, and southern boundaries are shared with the Eastern San Joaquin Valley, Delta-Mendota, and Turlock Groundwater Subbasins, respectively. The subbasin comprises land primarily in MID and the southern two-thirds of OID. The City of Modesto is in the southwestern portion of the subbasin. Average annual precipitation for this subbasin is 11 to 15 inches, increasing eastward.

- The Eastern San Joaquin Groundwater Subbasin is defined by the areal extent of unconsolidated to semiconsolidated sedimentary deposits that are bounded by the Mokelumne River on the north and northwest; San Joaquin River on the west; Stanislaus River on the south; and consolidated bedrock on the east.

- The Eastern San Joaquin Groundwater Subbasin is bounded on the south, southwest, and west by the Modesto, Delta-Mendota, and Tracy Subbasins, respectively and on the northwest and north by the Solano, South American, and Cosumnes Subbasins.

Figure 5-1 shows the Modesto and East San Joaquin Groundwater Subbasins.

5.2 Basin Management Objectives

To meet the purposes and goals of the groundwater management plan stated in Section 2.4, the agencies will adopt the following BMOs. Two sets of BMOs have been developed reflecting the integrated and regional nature of this groundwater management plan: (1) the broad BMOs are designed to have basin-wide and regional perspectives, and (2) more specific BMOs have been developed for each management area.

5.2.1 Maintain Groundwater Levels

Except for some localized areas, groundwater levels in the basin are generally stable. However, an increase in urban development and reliance of urban areas on groundwater may cause the groundwater table to lower. The Association's objective is to ensure that the

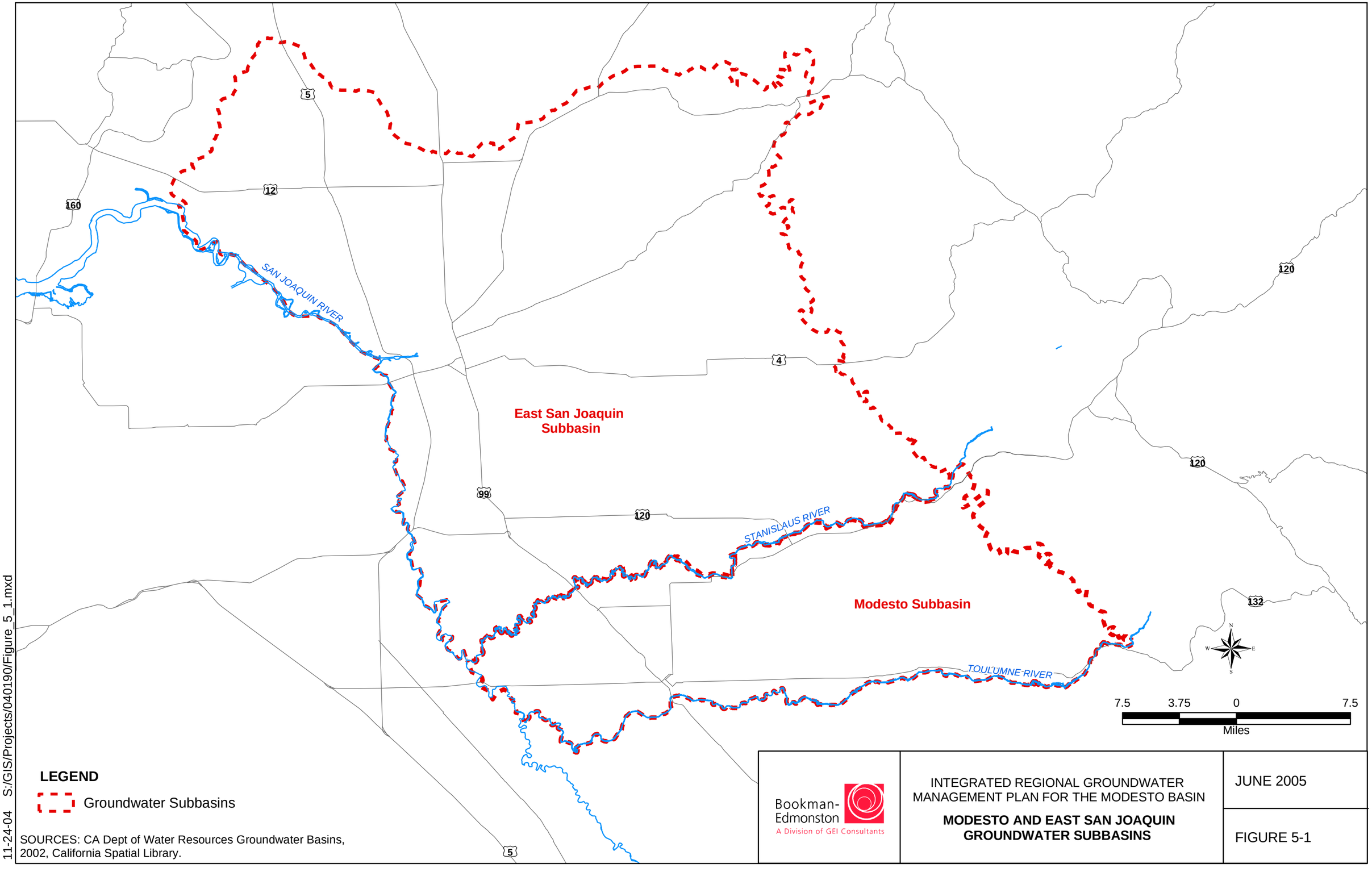
overall groundwater levels in the basin are maintained over time to provide long-term reliable sources of water for the economic well-being of the area. Specific actions to achieve this objective include:

- Identification and mapping of the basin's natural recharge areas.
- Protection of groundwater recharge areas. This may include communication, coordination, and cooperation with land use planning agencies to encourage them to take actions that would limit incompatible land use development practices in the recharge area.
- Development of a water budget to determine if the basin is in overdraft and, if so, to determine the amount of overdraft.
- Feasibility evaluation of artificial recharge projects.
- Identification and feasibility evaluation of conjunctive use projects.
- Support and encourage water conservation programs.
- In-lieu recharge through the importation of a surface water supply to areas currently relying on groundwater.

5.2.2 Control Degradation of Groundwater Quality

Water quality in the basin is adequate for agricultural use. North of the basin, the Cities of Oakdale and Riverbank enjoy excellent water quality. However, the City of Modesto has lost some of its production wells because of the migration of pollutants into its management area. Specific water quality actions for the basin include:

- Maintaining groundwater levels to control the movement of poor quality water into and within the basin. Groundwater pumping that results in the lowering of groundwater levels in part of the basin could alter the natural groundwater flow direction in the basin. In the area with groundwater contamination, this change could result in the movement of poor quality water in the basin. The City of Modesto has reduced groundwater pumping in some parts of the basin, augmenting its groundwater with surface water deliveries to its customers. Other actions may include implementing the actions summarized for the groundwater level BMOs listed above.
- Conducting a detailed geologic assessment of the basin, focusing on the areas with poor water quality, to identify the sources of contaminants and poor quality water. Developing actions and projects to mitigate the migration of poor quality water into the basin where practical.



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INTEGRATED REGIONAL GROUNDWATER MANAGEMENT PLAN FOR THE MODESTO BASIN

MODESTO AND EAST SAN JOAQUIN GROUNDWATER SUBBASINS

JUNE 2005

FIGURE 5-1

- Continuing to support the development of in-lieu recharge projects in urban areas with poor quality water (i.e., continuing the delivery of additional surface water to the City of Modesto to reduce its reliance on groundwater).

- The Association will coordinate and communicate with land use planning. The agencies will work together to discourage land use practices within the recharge areas that may contribute to groundwater degradation. Agencies within the basin, particularly urban water agencies, are concerned about protecting natural recharge areas from pollutants and about the quality of water used for potential future groundwater recharge projects. Such projects within the basin will be developed in a coordinated fashion and through the Association to ensure that the groundwater quality concerns of all management areas are considered.

- Evaluating the impact of annexation practices on groundwater levels and groundwater quality.

- The Association will coordinate and facilitate implementation of groundwater protection measures. These measures are discussed in more detail in Section 6.

5.2.3 Protect Against Potential Inelastic Land Surface Subsidence

Historically land surface subsidence within the basin has not been significant. Given the balanced nature of groundwater storage in the basin, potential future land subsidence is remote. However, the agencies will document and investigate any changes in land surface elevations and take appropriate actions if inelastic subsidence is observed.

5.2.4 Groundwater Monitoring and Assessment

The agencies in the Modesto Groundwater Subbasin understand the value of groundwater monitoring and assessment in the management of the basin. Groundwater monitoring is needed to track and assess the potential effects from the water-related activities and the implementation of management objectives in order to protect the quality and quantity of the basin's groundwater. The Association, therefore, is evaluating its groundwater monitoring needs and has developed (and periodically updated) its groundwater monitoring plan (Appendix D). A database is being developed to facilitate the storage, retrieval, and archiving of the basin groundwater data. The Association will also develop a groundwater model for the basin that can be used to evaluate the effects of the various proposed projects and management actions on groundwater levels and quality in the basin.

5.2.5 Evaluate Feasible Water Conservation Measures

Certain water conservation practices may be evaluated to determine their ability to improve water levels and water quality in the basin. Typical water conservation practices may include:

- Blending: Currently, MID pumps water from the shallow aquifer and blends it with surface water before delivering it to its agricultural water users. The agencies within the basin could evaluate an expansion of the blending program in order to lower the high groundwater table and improve water quality.

- Reuse of poor quality water: Groundwater in areas with a high level of nitrates can be pumped for agricultural uses in order to improve water supply availability and groundwater quality.

- Water conservation: Water conservation in the form of incentive programs, water audits, water metering, sewage fees, and other measures can be a tool to reduce demand on the basin.

5.2.6 Coordination and Cooperation

- Provide and expand existing forum for coordination and cooperation between all water entities to manage the Modesto Subbasin. Assist in formulating regional projects and programs for protection and use of subbasin water resources.

- Provide a framework for coordination and cooperation with the state and federal agencies and neighboring water entities such as TID, Stockton East Water District, and SSJID.

- A number of industrial plants in the Modesto Subbasin use groundwater. Production wells in these plants frequently affect groundwater levels in neighboring municipal and industrial wells during peak demands in summers. The Association will provide for an education and outreach program to bring industrial water users to the table and to work with them to develop conjunctive use projects to reduce well interference.

5.3 Groundwater Management Areas Objectives

This section addresses the specific objectives for each management area. Although specific to each management area, these objectives may limit or constrain activities within other management areas. Therefore, the participation and cooperation of agencies within the basin will be needed for the successful implementation of these objectives.

5.3.1 City of Modesto Management Area

Until 1995, the City of Modesto relied solely on groundwater for its service area. Groundwater degradation and more stringent drinking water quality standards resulted in the abandonment of a number of wells within the City's service area. Currently, the City is augmenting its groundwater supplies in its contingency service area with surface water received from MID. Groundwater quality issues, including elevated levels of uranium and

arsenic, are threatening the City's groundwater supply. To protect its groundwater and maintain groundwater as a viable drinking water source, the City of Modesto has formulated the following BMOs for its management area:

5.3.1.1 Groundwater Quality Protection

The City proposes to protect groundwater quality by developing and implementing specific actions to identify potential sources of contamination and to develop a management plan to control and curtail movement of contaminants into and within the basin. The specific actions may include the following:

- Develop a database and populate it with water quality data. Using the database information, develop tools to map contaminated areas as well as historic movement of the contaminants.

- Formulate and implement a geologic assessment to better understand the basin's aquifer characteristics and water movement and to evaluate and understand the sources of contaminants. Detect potential changes in water quality that could affect the long-term quality and quantity of the drinking water supply.

- Develop a well field management plan that will manage groundwater pumping to reduce or eliminate contaminant movement into and within the basin. Develop well design criteria, including proper spacing and screening of wells to manage groundwater pumping and the movement of contaminants.

5.3.1.2 Groundwater Levels

Groundwater levels, historically, were declining in this management area. Since 1995 and with the importation of surface water to augment the groundwater supply, groundwater levels have recovered. However, future population growth in and around the management area will increase groundwater use. To maintain groundwater levels in the management area, the City of Modesto formulated the following management objectives:

- Work with other entities in the subbasin to identify and protect the groundwater recharge area.

- Evaluate feasibility of groundwater recharge and conjunctive use projects including the development of artificial recharge areas, conjunctive use projects, and storage tanks with transmission mains for added reliability to the system.

- Work with MID to evaluate the feasibility of developing a cooperative in-lieu recharge and/or water exchange programs including the following:

    - Increase water treatment capacity and use of surface water to augment the groundwater supply.

- Develop an exchange program to mix the groundwater of marginal quality (for drinking water) with surface water and deliver it for agricultural use, golf courses, parks, and other open space areas in exchange for a surface water supply for the City of Modesto.

5.3.1.3 Water Conservation and System Improvement

The City of Modesto, under its Urban Water Management Planning function, will continue to evaluate water conservation and metering opportunities to reduce water demands in the service area. The City also plans to undertake a conveyance system interconnection improvement project to connect isolated delivery systems to its water delivery network. These actions will add flexibility to the system and enable the City to reduce pumping from the areas of poor water quality and reduce movement of contaminants in the basin.

5.3.2 Modesto Irrigation District Management Area

MID plays a major role in the groundwater management of the Modesto Groundwater Subbasin. MID and TID operate Don Pedro Reservoir and divert surface water for agricultural and urban uses to the basin. To manage groundwater levels and protect the basin groundwater quality, MID plans to implement the following BMOs:

- Develop a systemwide wellfield optimization program to actively manage MID's groundwater production and to manage its surface and groundwater resources conjunctively, in real time, to meet its water supply and energy management objectives.

- Manage MID's surface water and groundwater conjunctively in an integrated fashion. This would include importation and treatment of additional surface water supplies from MID to the City of Modesto to reduce pumping groundwater.

- Continue working with the City of Modesto to protect the management area from potential overdraft and movement of contaminants to the basin. In cooperation with the City of Modesto, develop a water exchange program to mix the groundwater of marginal quality (as potable water) pumped by the City with surface water and deliver it for agricultural use, golf courses, parks, cemeteries, and other open space areas in exchange for surface water delivery to the City of Modesto.

- Evaluate the feasibility of an expanded blending program and the use of shallow water acquired for delivery to agricultural water users.

5.3.3 City of Oakdale Management Area

The City of Oakdale relies solely on groundwater for its water supply. The City's goal is to protect its groundwater levels and quality for a sustainable water supply for its citizens.

5.3.3.1 Groundwater Levels

The City operates nine wells, two of which were recently constructed. Water levels in some wells are impacted by operations of production wells at the Hunts and Hershey industrial plants. To protect its groundwater levels, the City can:

- Conduct a systemwide optimization study to determine how its wells can be operated to maximize production while minimizing the impact from the other wells.
- Work with plant managers to minimize operation impacts during the City's peak water demand. Promote and encourage an industrial water conservation program.
- Work cooperatively with other water entities in the basin to promote and implement conjunctive management programs. Specifically, investigate the potential of treatment facilities for surface water that could be supplied by OID.
- Work cooperatively with other agencies to identify and develop groundwater recharge projects when possible.

5.3.3.2 Groundwater Quality Protection

- Construct a sanitary seal on all new wells and work with other groundwater users within the management area to ensure proper well construction methods are used for all new wells.
- Abandon wells within the management area in accordance with the Stanislaus County well abandonment ordinance.
- Regularly monitor wells adjacent to industrial areas to detect any potential water quality degradation. If degradation is detected, consult with the Regional Water Quality Control Board to encourage the implementation of necessary steps to control the migration of poor quality water.

5.3.4 City of Riverbank Management Area

Groundwater is the only source of water for the City of Riverbank. Currently, groundwater levels and water quality are stable within this management area. Groundwater quality protection is the only BMO designated for this management area. To protect the groundwater quality of the management area, the City can take the following actions:

- Monitor groundwater quality to ensure that it is not compromised by the operation of industrial facilities such as the wood treatment plant. If water quality degradation is detected, consult with the Regional Water Quality Control Board to encourage the implementation of actions to control the migration of poor quality water in the basin.

- The City is concerned about the operation of a future recharge project and the quality of water used for recharge. The City will work with other water agencies within the basin to ensure that the future recharge project operation will not compromise groundwater quality in the Riverbank management area.

5.3.5 Oakdale Irrigation District Management Area

The OID management area is divided between the Modesto Groundwater Subbasin and the East San Joaquin Groundwater Subbasin. About 60 percent of the OID management area is within the Modesto Subbasin. However, the issues of the management area north and south of the Stanislaus River are similar and the BMOs listed below will be applicable for the entire management area. Urbanization within and around the management area has increased groundwater production and the potential for future overdraft. OID plans to implement the following BMOs:

- Develop a systemwide well field optimization program to actively manage groundwater production and to manage surface and groundwater resources conjunctively, in real time, to meet OID's water supply and energy management objectives.

- Manage OID's surface water and groundwater resources conjunctively. This would include:

    - Investigating the feasibility of developing conjunctive use and groundwater recharge projects. Determine if groundwater recharge is a viable option to reduce the falling water table within the management area.

    - Promoting programs and actions that protect recharge areas within the management area.

    - Investigating the feasibility of annexing areas currently on groundwater in order to bring surface water to the area for in-lieu recharge programs. Evaluating the potential benefits of the annexation of adjacent farmland on falling groundwater table within the management area, which is reliant on groundwater, and converting it to surface water.

    - Investigate impacts of upstream development (urban or agriculture) on the water quality and groundwater level within the OID service area.

5.3.6 Stanislaus County Management Area

The County of Stanislaus is represented by the DER at Association meetings. Partnering with the Association in basin-wide groundwater management is consistent with the Board of Supervisors' priority of ensuring a safe and healthy community, facilitating economic

development, and achieving multijurisdictional cooperation. To meet these priorities, the County promotes and participates in Association programs that:

- Preserve and protect the groundwater resource
- Enhance the understanding of groundwater resources through the gathering and sharing of information
- Provides factual information that may serve as a basis for land use decisions in the groundwater basin

5.4 Current Groundwater Monitoring Activities

Groundwater levels in the Modesto Subbasin have been measured in about 230 wells by the DWR and its cooperatives. The wells used for monitoring may be in different aquifers and at times have long screen intervals that make an interpretation of groundwater flow directions and water quality difficult. Some member agencies are reporting data to DWR and are included in this list.

The USGS, in partnership with member agencies of the Association, has monitored 17 wells in the area for the National Water Quality Assessment Program. It has also constructed or plans to construct additional monitoring wells in the City of Modesto to define hydraulic characteristics, water levels, and water quality in the shallow and confined aquifers. Appendix D contains a list of these wells.

The University of California-Davis with grant funding has constructed several monitoring wells to assess nitrates and nutrient management near dairies.

The Association's members, to varying extents, monitor groundwater production, levels, and quality. Table 5-1 summarizes the current level of monitoring through the member agencies.

Table 5-1
Current Level of Monitoring Efforts

Member Agency	Total Number of Wells	Pumping Totals Monthly	Number of Wells Where Groundwater Levels Are Measured			Number of Wells Where Groundwater Samples Are Analyzed for Water Quality			Water Quality Analyses Performed
			Monthly	Semiannual	Annual	Quarterly	Semiannual	Annual	
MID	104	104		96			15		General Mineral, Boron
								104	EC + pH
OID	17	17		17					
City of Modesto	62	86				14 (VOCs)			Per Title 22 and DHS
Ceres	4	4							Per Title 22 and DHS
Walnut Manor	1	1							Per Title 22 and DHS
Salida	7	7							Per Title 22 and DHS
Del Rio	3	3				1			Per Title 22 and DHS
Waterford	7	7							Per Title 22 and DHS
Hickerman	2	2				1			Per Title 22 and DHS
City of Oakdale	7	7							Per Title 22 and DHS
City of Riverbank	7	7							Per Title 22 and DHS
Total	**221**	**245**	**0**	**113**	**0**	**16**	**15**	**104**	

Source: CCR from City of Modesto; MID e-mail comunication, 2004; OID well location map; Oakdale Water Master Plan, Riverbank production totals

Member Agency	Total Number of Wells	Pumping Totals Monthly	Number of Wells Where Groundwater Levels Are Measured			Number of Wells Where Groundwater Samples Are Analyzed for Water Quality			Water Quality Analyses Performed
			Monthly	Semiannual	Annual	Monthly to Every Three Years			
DWR (including									
Cooperators)	230			230					
OID	15						15		Drinking Water Parameters
Department of Health							209		Per Title 22 and DHS
Services (Including									Per Title 22 and DHS
Cooperators)									Per Title 22 and DHS
Total	**245**			**230**			**224**		

Source: DWR, 2004, Bulletin 118

Other groundwater monitoring conducted in the basin assesses releases of hazardous materials to the environment. These wells are typically near metropolitan areas and the resulting data are provided to the Regional Water Quality Control Board. These wells are extremely useful because they typically monitor the first water encountered, which can be correlated with surface water gaging stations to evaluate the aquifer connectedness.

5.4.1 Subsidence Monitoring

Land subsidence in the Central Valley has occurred in three areas with an aggregate area of about 4,000 square miles. Subsidence has occurred in the area extending from Los Banos to Wasco, from Arvin to Maricopa, and in the Delta region east of Stockton. Subsidence has also occurred along the west side of the valley in Yolo, Solano, and Colusa Counties.

Subsidence can be elastic or inelastic. Elastic subsidence occurs when aquifers are pumped and the pore pressure is decreased. After recharge occurs and the heads increase, the land surface generally recovers. Elastic subsidence in the Sacramento Valley has been reported to be on the order of about 0.2 feet (Borchers et al. 1998). Inelastic subsidence results in permanent, irreversible declines in ground surface.

Inelastic subsidence is of three types in the Central Valley: oxidation of peat, lowering of the artesian head in confined aquifer systems, and near-surface compaction of moisture deficient alluvial fan deposits above the water table (Poland and Evenson 1966). Subsidence can also occur in areas where water-level declines in unconsolidated aquifers allow mineral grains to permanently adjust to a denser arrangement (Borchers et al. 1998). The mechanisms of subsidence in unconsolidated aquifers are governed by groundwater levels. If the water levels drop below their lowest historic level, inelastic subsidence may occur. In these cases, inelastic subsidence is generally due to compaction in thick clay beds.

The Association is in an area where subsidence has not been reported, although no specific studies have been conducted in the area. The potential for subsidence in the area is low because the sediments lack peat, the sediments were deposited with water, and the Corcoran clay is relatively thin and is not distributed throughout the area. Groundwater levels have declined in unconsolidated sediments through 1995 and may have resulted in some inelastic subsidence. It is not anticipated that groundwater levels will be lowered below these historic levels, and therefore the potential for subsidence in the area is low.

5.5 Facilitating Conjunctive Use Operations

The most significant conjunctive use operation in the Modesto basin is the construction of the Modesto Regional Water Treatment Plant and its associated storage and delivery systems, which treats surface water for delivery to areas that had previously relied solely on groundwater. This project has contributed to the recovery of groundwater levels in the Modesto area, improved the delivery system's reliability, and has reduced pollutant movement in the basin. The program for expanding the treatment plant and its associated

storage and delivery systems is under way. This conjunctive management of the basin's surface water and groundwater resources contributes to the protection of the basin, while providing a reliable water supply for the City of Modesto.

Other conjunctive use projects will be investigated. One key study to formulate conjunctive use projects will identify recharge areas in the basin.

6 Groundwater Protection Measures

A high priority of the IRGMP is protection of the groundwater resources. This will be accomplished through a series of actions, described below, that will be implemented by the Association members and facilitated by the Association.

6.1 Identification and Management of Wellhead Protection Area

The purpose of wellhead protection is to protect the groundwater used for public supply, thereby eliminating costly treatment to meet relevant drinking water quality standards. A Wellhead Protection Area (WHPA), as defined by the Federal Wellhead Protection Program established by Section 1428 of the Safe Drinking Water Act Amendment of 1986, is "the surface and subsurface area surrounding a water well or wellfield supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield." The WHPA may also be the recharge area that provides the water to a well or wellfield. Unlike surface watersheds that can be easily determined from topography, WHPAs can vary in size and shape depending on subsurface geologic conditions, the direction of groundwater flow, pumping rates, and aquifer characteristics. WHPAs are not directly an agricultural issue. However, in the Modesto Basin, because of the relationship between agricultural and municipal water uses, some important considerations in delineating WHPAs are as follows:

- Location of existing public supply wells
- Identification of probable locations of future public supply wells
- Present direction of groundwater flow
- Probable direction of future groundwater flow
- Construction characteristics of public supply wells (i.e.; perforated intervals and annular seals)
- Subsurface geologic conditions (i.e., restricting layers, confining beds, and other features)
- Rate of current groundwater flow
- Pumping from upgradient areas
- Potential sources of contamination

- Forecasted future land use

Potential areas of water quality risk include:

- Areas without improved sewage collection systems
- Areas with leaky sewer pipes and septic systems
- Wells improperly abandoned
- Confined animal feedlots
- Agricultural practices where chemicals are used
- Areas with potential for spills of hazardous materials

Identification of wellhead protection areas is a component of the Drinking Water Source Assessment and Protection Program (DWSAP Program) administered by the Department of Health Services. It set a goal for all water systems statewide to complete Drinking Water Source Assessments by December 31, 2002. The Cities of Modesto, Riverbank, and Oakdale have completed their required assessments by performing the three major required components listed below:

- Delineation of capture zones around sources (wells)
- Inventory of Potential Contaminating Activities (PCAs) within protection areas
- Vulnerability analysis to identify the PCAs to which the source is most vulnerable

Delineation of capture zones includes using groundwater gradient and hydraulic conductivity data to calculate the surface area overlying the portion of the aquifer that contributes water to a well within specified time-of-travel periods. Typically, areas are delineated representing 2-, 5-, and 10-year time-of-travel periods. These protection areas need to be managed to protect the drinking water supply from viral, microbial, and direct chemical contamination.

Inventories of PCAs include identifying potential origins of contamination to the drinking water source and protection areas. PCAs may consist of commercial, industrial, agricultural, and residential sites, or infrastructure sources such as utilities and roads. Depending on the type of source, each PCA is assigned a risk ranking, ranging from *very high* for such sources as gas stations, dry cleaners, and landfills, to *low* for such sources as schools, lakes, and non-irrigated cropland.

Vulnerability analysis includes determining the most significant threats to the quality of the water supply by evaluating PCAs in terms of risk rankings, proximity to the well being surveyed, Physical Barrier Effectiveness (PBE), and whether contaminants have previously

been detected. PBE takes into account factors that could limit infiltration of contaminants including type of aquifer, aquifer material (for unconfined aquifers), well operation, and well construction. The vulnerability analysis is based on a scoring system that assigns point values for PCA risk rankings, PCA locations within the wellhead protection area, and well area PBE. The PCAs to which drinking water wells are most vulnerable are apparent once vulnerability scoring is complete.

6.1.1 Actions

The Association will facilitate the following actions:

- A component of the DWSAP Program is an assessment of vulnerability of groundwater sources to quality degradation. The Association member agencies providing drinking water should obtain proper clearances for the release of information and prepare vulnerability summaries from the DWSAP Program to be used for guiding management decisions in the basin.

- Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and "lessons learned" regarding establishing wellhead protection areas.

- Attend groundwater conferences and technical workshops and meetings to learn more about groundwater management practices.

6.2 Regulation of the Migration of Contaminated Groundwater

The migration and remediation of contaminated groundwater is of primary concern to the Cities of Modesto, Riverbank and Oakdale. Also of concern is the localized contamination of groundwater by industrial point sources such as dry cleaning facilities, food processors and the numerous fuel stations throughout the Modesto Basin and OID service area north of the Stanislaus River.

While the Association does not have authority or responsibility for remediation of this contamination, it is committed to coordinating with responsible parties and regulatory agencies to keep Association members informed of the status of known groundwater contamination in the basin.

6.2.1 Actions

The Association will take the following actions:

- Coordinate with the USGS to expand the network of monitoring wells to provide for an early warning system for public supply wells.

- If detections occur in these monitoring wells, facilitate meetings between the responsible parties and potentially impacted member agency(ies) to develop strategies to minimize the further spread of contaminants. Specifically, the consideration of altering groundwater extraction patterns or altering production wells in the vicinity of a pollutant plume to change the groundwater gradient.

- Provide a forum to share all information on mapped contaminant plumes and Leaking Underground Storage Tank sites in order to develop groundwater extraction patterns and in site planning of future production or monitoring wells.

- Meet with representatives of the Central Valley Regional Water Quality Control Board (CVRWQCB) to establish a relationship and identify ways to have open and expedient communications with the CVRWQCB regarding any new occurrences of contamination, particularly when contamination is believed to have reached the water table.

- Track upcoming regulations on septic systems, agricultural discharges and other regulatory programs that pertain to water quality degradation.

6.3 Identification of Well Construction Policies

The Stanislaus County Department of Environmental Resources (DER) administers the well permitting program in the unincorporated areas of the Modesto Basin while the San Joaquin County Department of Environmental Health (DEH) administers well construction for the portion of OID lying within San Joaquin County. The standards in both counties for construction are consistent with those recommended in State Water Code Section 13801. This section requires counties, cities, and water agencies to adopt the State Model Well Ordinance as a minimum standard for well construction or a more rigorous standard if desired. Each city in the Association has enacted a well ordinance adopting the *California Well Standards, Bulletin 74-81,* and all supplements. This ordinance is utilized in wells constructed within the incorporated area of each city. Each city provides a review of well construction plans and specifications within the incorporated area. The Stanislaus County DER and the San Joaquin County DER have enacted well ordinances adopting the *California Well Standards, Bulletin 74-81* and all supplements for the unincorporated areas of these counties. The Stanislaus County DER and San Joaquin County DEH staffs also review applications and construction plans and specifications and issue permits for wells constructed or destroyed in unincorporated areas. Both counties require and maintain well logs and water well driller reports for constructed wells.

Standards also exist for contractors involved in well construction. Section 13750 of the California Water Code requires that well drillers possess a C-57 Water Well Contractors License, and Section 13751 requires well drillers to file a well completion log with DWR for every production or monitoring well constructed.

The number of service connections determines whether operating permits for wells used for public drinking water are provided through the Department of Health Services or either the Stanislaus County DER or the San Joaquin County DER. The Department of Health Services has jurisdiction over public water system wells with over 200 service connections. Wells that serve public water systems with fewer than 200 service connections fall under the jurisdiction of the county.

6.3.1 Actions

The Association will facilitate the following actions:

- Ensure that all member agencies are provided a copy of the applicable county well construction ordinance and understand the proper well construction procedures.
- Coordinate with member agencies to provide guidance, as appropriate, on well construction to prevent creating conduits through regionally confining beds. Where feasible and appropriate, this could include the use of USGS lithologic data prior to construction of the well to assist in well design.

6.4 Administration of Well Abandonment and Destruction Programs

There are many unknown, obsolete or abandoned water supply and natural gas wells within the Modesto Groundwater Basin. These wells provide potential locations for monitoring of groundwater levels, but more frequently serve as a source of contamination and should be abandoned.

One of the primary concerns of local agencies is the groundwater contamination risk posed by unused wells which have not been properly destroyed. Section 21 of DWR Bulletin 74-81 and revisions contained in Part II of Bulletin 74-90 allow classification of unused wells into two types, abandoned and inactive. An abandoned well is defined as one which has not been used for a period of one year, and whose owner has declared the well will not be used again. If the well has not been used during the past year, but the owner demonstrates his/her intention to use the well again for supplying water, the well is considered inactive. Four criteria must be met in order for a well to maintain the inactive, rather than abandoned, classification. These criteria are:

- The well has no defects
- The well is securely covered
- The well is clearly marked
- The surrounding area is kept clear of brush and debris

Failure to meet these criteria could result in the well being classified as abandoned under current regulations. All abandoned wells, exploration or test holes, and monitoring wells must be destroyed as stated in Section 22 of Bulletin 74-81 and revisions contained in Bulletin 74-90.

An abandonment program should focus on those wells which pose the greatest threat to groundwater; however, numerous factors make the abandonment and destruction of wells difficult. These factors include lack of consistency in records regarding well construction, location and use; cost of well destruction; and the defined classification for abandonment of wells. Well construction within the study area has taken place for nearly a century, with records and standards altered over time. Recent records pertinent to construction and location of new wells are more complete than earlier records which are often inconsistent. The lack of financial incentive for well owners to declare a well as abandoned also reduces the effectiveness of the well abandonment program.

Stanislaus County administers the well destruction program in most of the Modesto Basin while San Joaquin County administers the program in the portion of OID that lies within San Joaquin County. The standards for construction are identified in the county codes for these two counties and are based on State of California standards.

6.4.1 Actions

The Association members, including Stanislaus County and the cities, will take the following actions for lands within their jurisdictions:

- Ensure that all Association members are provided a copy of the code and understand the proper destruction procedures and support implementation of these procedures.
- Follow up with Association members on reported abandoned and destroyed wells to confirm information collected from DWR and receive information on abandoned and destroyed wells to fill gaps in county records.
- Obtain “wildcat” map from California Division of Oil and Gas to ascertain the extent of historic gas well drilling operations in the area as these wells could function as conduits of contamination if not properly destroyed.
- Seek funding to develop and implement a program to assist well owners in the proper destruction of abandoned wells.

OID will communicate with San Joaquin County staff to determine the status of abandoned and destroyed wells within the boundaries of OID and will coordinate with San Joaquin County on the procurement of “wildcat” maps from the California Division of Oil and Gas.

6.5 Mitigation of Overdraft Conditions

The Association supports activities such as those undertaken by the City of Modesto and MID providing surface water to areas once wholly dependent on groundwater and eliminating localized overdraft. The Association also supports actions by MID and OID to encourage customers to continue to receive surface water deliveries so that growers do not turn to groundwater as a more flexible source of irrigation supply during periods when surface water is abundant.

6.5.1 Actions

The Association will facilitate the following actions:

- Support programs that relieve aquifer overdraft through substitution of surface water for groundwater.
- Continue implementation of water conservation programs, including the water metering program, that will reduce reliance on groundwater pumping.
- Continue and enhance groundwater monitoring and groundwater use to ensure the balanced state of the groundwater basin
- Support programs by MID and OID to improve irrigation service to water users who may otherwise irrigate using groundwater because of the greater operational flexibility achievable through pumping.
- Seek funding for programs and projects that would identify and mitigate potential condition of overdraft in the basin.

6.6 Replenishment of Groundwater Extracted by Water Producers

A component of wellhead protection and an important groundwater management strategy is the protection of major recharge and withdrawal zones. This strategy has far-reaching effects in the Modesto and San Joaquin Basins because of the significant groundwater recharge occurring as a result of agricultural surface irrigation. Groundwater recharge must be adequate to replenish extracted groundwater, while withdrawal zones need protection from upgradient sources to ensure that the quality of extracted groundwater meets the standards established for the intended use.

A comprehensive approach to the protection and management of the major recharge and withdrawal zones is much more appropriate than the use of individual zoning techniques. Communities, in concert with neighboring towns and in coordination with the region, must develop comprehensive land and water resource management programs that go beyond simple zoning approaches for the protection of agricultural and urban areas.

The Association has evaluated surface geology within and directly adjacent to its boundary for the purpose of delineating areas having potentially high recharge rates. The basin contains numerous discontinuous recharge and withdrawal areas that do not allow for easily defined mapping of recharge zones. Nevertheless, a large portion of the study area has been determined to contribute to recharge. The Association supports land use measures that will preserve potential recharge areas from development that would reduce or eliminate their effectiveness as recharge sites.

6.6.1 Actions

The Association's member agencies will take the following actions:

- Identify areas having high potential for contributing to aquifer recharge and encourage agencies to communicate with land use planning entities to enact measures that will protect these lands from development that would reduce their value as recharge sites.

- Communicate with DWR and other governmental agencies studying groundwater and river interactions.

6.7 Construction and Operation of Recharge, Storage, Conservation, Water Recycling and Extraction Projects

Various Association members share responsibility for development and operation of recharge, storage, conservation, water recycling and extraction projects. The role of the Association is to promote cooperation and sharing of information between the agencies sponsoring water management projects and other member agencies. To the extent feasible, the Association will also support measures to coordinate development and optimize operation of facilities to improve the basin-wide effectiveness and efficiency of water management.

6.7.1 Actions

The Association will take the following actions:

- Encourage sharing of information on project planning, design and operation among member agencies.

- Promote a coordinated approach toward project development and operation to lower the costs and increase the benefits of water management efforts.

- Seek funding for projects and programs that will contribute to water conservation, recycling, and recharge of the groundwater basin.

6.8 Control of Saline Water Intrusion

Saline water intrusion from the San Joaquin River or from the west side of the San Joaquin Valley (including intrusion from the marine layers) is not well documented in the Modesto Groundwater Basin. Groundwater elevations prevalent in the basin have historically maintained a positive gradient preventing significant migration of saline water associated with groundwater from the western San Joaquin Valley. Maintaining the positive groundwater gradient will continue to prevent induced flow from the river or from groundwater west of the San Joaquin River.

6.8.1 Actions

The Association coordinates with member agencies and other local and state agencies to take the following actions:

- Continue collecting groundwater quality data along the San Joaquin River, and track the progression, if any, of saline water moving east from the San Joaquin River. This action will include communicating with DWR's District Office on a biennial basis to check for significant changes to TDS concentrations in wells. DWR has a regular program of sampling water quality in selected domestic, agricultural and monitoring wells throughout the basin. These wells will be augmented by additional monitoring wells to develop an early warning system able to detect saline water intrusion from the river.

- The program of monitoring for intrusion of saline water will be supplemented by the Groundwater Monitoring Program described in this plan. The program includes provisions for monitoring groundwater levels and quality.

- Observe TDS concentrations in public supply wells that are routinely sampled under the DHS Title 22 Program.

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7 Stakeholder Involvement

The Association's member agencies initiated a planning process to prepare an IRGMP. This plan is developed to comply with provisions of SB 1938 and SB 1672, including the provisions related to public involvement processes.

7.1 Involvement of Other Agencies and Entities

The six agencies forming the Association are the Cities of Modesto, Oakdale, and Riverbank, Stanislaus County, Oakdale Irrigation District, and Modesto Irrigation District. These agencies share the groundwater resources and worked together to formulate this management plan. The Association provides coordinated planning to make the best use of available resources to the mutual interests of the inhabitants and resources of the groundwater subbasin. Throughout this planning process, other interested agencies and entities within the subbasin were encouraged to participate in developing the plan. The Association will work with member agencies and other entities to implement the components of this plan. The County of Stanislaus, a member of the Association and the advisory committee to prepare this management plan, is representing other self-supplied groundwater producers. The Association should encourage a proactive outreach to these groups. One group of suppliers in particular is made up of the industrial groundwater users in the basin. The Association will develop an outreach process to meet with the group and work together for more effective management of the water resources of the basin.

7.2 Coordination with Other Agencies

The Association member agencies have also coordinated the planning process with other neighboring water agencies and subbasins. The City of Modesto is also participating in the development of a groundwater management plan for the Turlock Groundwater Subbasin and has been communicating the development of the management plan for the Modesto Subbasin to Turlock Subbasin stakeholders. Similarly, OID has been communicating the development of the management plan with the SSJID for the the Eastern San Joaquin Groundwater Subbasin. The Association plans to provide draft copies of this management plan to the neighboring subbasins.

7.3 Advisory Committee

The Association's member agencies formed an advisory committee to cooperate in the development of an integrated regional groundwater management plan. They met the first Thursday of each month to discuss the water management issues of the basin and guide the planning process to develop the plan. Through detailed discussion, the advisory committee

has developed BMOs and a related implementation plan. This management plan is the result of the Advisory Committee's work over a 12-month period.

7.4 Public Involvement

An extensive public involvement process was planned for developing the IRGMP. The components of the public involvement process include the following:

- Each agency has published a notice informing the public of the intention of the agency to hold a public hearing to determine whether to adopt a resolution to prepare the agency's groundwater management plan. These notices are included in Appendix E. Stanislaus County, although actively participating in the preparation of the plan, has not published a notice informing the public of the intention of prepare such plan.

- The governing bodies of each agency, in their regularly scheduled meeting, held a hearing (after publication of notice) on whether to adopt a resolution of intent to prepare an IRGMP. At the conclusion of the hearing, each agency adopted a resolution to draft the plan and directed the staff to participate with other members of the Association to form a "Regional Water Management Group" to prepare an "Integrated Regional Groundwater Management Plan." In these hearings, the public was invited to comment on whether the agency should adopt the resolution and on the planning process. The public was informed on how to provide comments to the agency.

- At the conclusion of each agency hearing, the agency adopted a resolution of intent. The agency also provided "a written statement describing the manner in which interested parties may participate in developing the IRGMP."

- The Association also published a notice of intent, on behalf of its member agencies, to prepare an IRGMP. The notice included the schedule and location of a public hearing. The Association also acts as an advisory committee of the stakeholders in development of the management plan.

- After the publication of notice of intent, the Association held a public hearing to brief the public and interested parties about the planning process, schedule, content, and how the public can participate in the process and provide comments. Interested parties and the general public were invited and encouraged to attend the hearing and provide comments. After the hearing, a regional water management group was formed by the agencies who had decided to prepare an integrated regional groundwater management plan.

- When the public draft of the Integrated Regional Management Plan becamse available in April 2005, a notice was given (in the Modesto Bee and on the agency

website) to notify the public about the availability of the draft plan. Copies of the draft plan were made available to the public upon request. A public meeting was also scheduled. The place, date, and the time of the meeting conducted by the Association was included in the notice.

- The governing bodies of the participating agencies will schedule, in their regular meeting, a discussion of the Draft Plan, provide information to the public as to the content of the Draft Plan, and receive comments. The contact person's name and address will be provided to the public for the submission of any written comments on the Draft Plan.

- The Regional Water Management Group will hold a public meeting to brief the public about the draft of the plan and will solicit public comment. It will decide whether to adopt the plan and submit it to the member agencies with a recommendation for its adoption. It will provide the name, phone number, and address of a contact person who will receive written comments from the public.

- Upon completion of the IRGMP, each agency will publish a notice of intent to hold a hearing as to whether the agency will adopt the plan. The notice will include a summary of the plan and will state the means of providing copies of the plan to interested parties.

- Each agency will hold a hearing to determine whether to adopt the plan. The agency shall consider protests to the adoption of the plan. If the agency determined that "a majority protest" has not been filed, the agency will adopt the IRGMP within 35 days after the conclusion of the hearing.

Detailed documentation of the public involvement processes is presented in Appendix E.

7.5 Developing Relationships with State and Federal Agencies

In mid-2004, the Association engaged in discussions with the DWR to initiate a cooperative relationship for the conjunctive management of the basin. As a result of these discussions, the Association and DWR signed a Memorandum of Understanding to work together to develop conjunctive use projects. A copy of that document is in Appendix B.

For the last several years, the Association has been working cooperatively with the USGS to study the geology and aquifers of the Modesto Subbasin. The Association and the USGS have entered into an agreement, under the National Water-Quality Assessment Program, to map the subsurface geology of the basin and to develop a data network and a three-dimensional model of the basin.

The Association member cities are also working with the Department of Health Services on issues related to compliance with Title 22, Drinking Water Quality Standards.

7.6 Dispute Resolution Process

The Association has been used effectively as a tool for the resolution of water management issues in the basin. Discussion of issues in Association meetings, in an open and transparent process, resulted in a cooperative relationship between water users of the basin. The Association will continue to provide a forum for discussion and early resolution of water issues in the basin.

8 Plan Implementation

This section includes a discussion of program integration and local, statewide, and regional water management priorities and illustrates how the structure of the IRGMP addresses these priorities. It then addresses the specifics of plan implementation.

Key features of the IRGMP are the linkages that have been established among program actions. These linkages transform a group of isolated measures into a coherent program where the whole is greater than the sum of the parts. Linkages have been established by emphasizing the objective of developing an integrated and regional approach. Specific instances where individual activities have been linked to generate broader, more complementary actions are discussed below.

8.1 Integration of Local, State and Federal Monitoring Activities

At present, a number of different agencies are responsible for different aspects of groundwater monitoring in the subbasins. One of the recommendations of the IRGMP is to continue the ongoing process of integrating local monitoring programs and improving access to and management of groundwater data. Local, state and federal entities expected to be involved in this process include DWR, USGS, Department of Health Services, and local water agencies. The objective of the recommendation is to have a groundwater monitoring and data management program that is comprehensive, efficient and provides data in a format that is easy to access to facilitate rapid recognition of problems and to support good management decisions. As a component of this management plan, a groundwater monitoring plan was also developed to ensure adequate data is collected to track the effect of implementation of BMOs.

8.1.1 Integration of Surface and Groundwater Operations

This linkage is at the heart of the IRGMP as it requires coordinated operation of surface and groundwater resources to attain the various BMOs. Specific opportunities for integrated surface and groundwater operations include development of recharge basins, increased use of groundwater to respond to fluctuations in irrigation demand, and increased use of surface water to meet growing municipal and industrial requirements, including the expansion of the Modesto Regional Water Treatment Plant and its associated storage and delivery systems.

8.1.2 Integration of Groundwater Use and Surface Water Delivery

One of the important recommendations of the IRGMP focuses on the potential to link optimization of groundwater use to surface water deliveries. This concept rests upon the idea that MID and OID could reduce system spillage by managing their use of groundwater to

respond to fluctuations in demands by irrigators. Use of wells enables water to be introduced into the delivery systems close to the points of demand, thereby reducing the lag time between points of delivery and points where water is introduced into the system in response to changes in delivery orders. The benefits of using groundwater to fine tune surface water deliveries may be further enhanced by making priority use of wells in high water table areas to achieve flow augmentation. In this way, water supply and water table control benefits could be achieved through implementation of one program.

Optimization of well field operations and linkage with the surface water deliveries further integrates the districts' water conservation, energy conservation, and water quality objectives into the districts' daily operations by reducing operational spillage.

8.1.3 Integration of Water Management (MID and City of Modesto)

An example of collaboration between two local agencies has been the effort to supply surface water from MID to the MRWTP. This reallocation has enabled the City of Modesto to expand its capacity to supply treated water without requiring that the City expand pumping of groundwater. MID's ability to supply water to the City of Modesto has been supported by innovative water management practices within MID that have enabled this reallocation to take place without compromising service to other MID customers.

8.1.4 Integration of Water Quality Management for Both Surface Water and Groundwater

Association members have cited declining groundwater quality as one of their major concerns. Coordinated operation of pumps to contain groundwater contamination and recharge of high quality surface water are among the management options available.

8.2 Local, Statewide, and Regional Priorities

8.2.1 Local Priorities

The overriding local priority for implementation of the IRGMP is satisfying regional and local water management objectives as they are formulated through the development of BMOs. Local BMOs are specific approaches for achieving water management goals including groundwater supply, groundwater quality, and protecting against inelastic land surface subsidence. Because they are presented within the context of a basin-wide plan, the local BMOs illustrate the degree to which many of the local BMOs are common to more than one of the participating agencies and implementation of local BMOs is best achieved through cooperation among participating agencies.

Through their involvement in the development of the IRGMP, participating agencies have demonstrated their conviction that the most effective approach to local water management is through regional actions. Specific local BMOs are discussed later in this section.

8.2.2 Statewide Priorities

Implementation of the IRGMP will enable the Association and its member agencies to respond to a range of statewide water management initiatives. Key among these is the increasing emphasis placed on agencies to develop integrated regional solutions to water management problems and to coordinate the conjunctive management of surface water and groundwater for sustainable water supply reliability and water quality in California.

Completion and adoption of the IRGMP will allow participating agencies to satisfy one of the key prerequisites for grant funding through Chapter 8 of Proposition 50, the Integrated Regional Water Management Grant Program. The integrated plan also frames specific water management projects in the context of an integrated regional water management strategy. Although the plan emphasizes groundwater management, elements of the plan address the use of surface water supplies, water conservation, and water recycling and blending to meet demands that have previously been met with groundwater. This integration of surface and groundwater resources leads to a more comprehensive management of water supplies and provides a lucid framework for compliance with state and federal water quality standards.

In particular, by promoting effective water use in the Modesto Groundwater Subbasin, implementation of the IRGMP will:

- Increase California's water supply reliability
- Reduce conflicts among water users
- Contribute to meeting Delta water quality objectives
- Assist in the implementation of Regional Water Quality Control Board Watershed Management Initiatives Chapters, plans and policies

8.2.3 Regional Priorities

The IRGMP is an effort that recognizes that the most effective approach to managing a basin's water resources is an integrated plan that enlists the cooperation of the agencies whose political boundaries match the basin's physical boundaries. As noted above, the IRGMP includes a number of regional BMOs that have been agreed upon by all of the participating agencies. The overarching regional objective of the plan is to foster good stewardship of the resources and to promote wise management of regional resources that responds to regional and local BMOs. Providing reliable good quality water for the basin water users is essential for the economic wellbeing and welfare of the citizens of the region. Specific regional objectives include:

- Improve local water supply reliability
- Protect the region's groundwater resources

- Improve water quality
- Foster prudent stewardship of water resources
- Facilitate compliance with local, state, and federal water quality and public health regulations

8.2.4 Basin-Wide Water Management Strategies

The regional water management actions support a comprehensive approach to managing water resources in the Modesto groundwater basin. In particular, these actions provide a framework for developing projects that advance the following water management strategies:

- Increase local and regional water supply reliability and water use efficiency: Management actions supporting conjunctive management, policy assessment, and development of a basin-wide water budget will be key to the implementation of this strategy.
- Promote groundwater recharge and management: Actions encouraging the identification of natural recharge areas and the evaluation of artificial recharge areas will be used to implement this strategy.
- Support water conservation: Development of a basin-wide water budget will be used to identify water conservation opportunities. Management and optimization of well field operations will be used to reduce spillage from irrigation distribution systems. Support the urban water conservation programs and water metering programs.
- Implement watershed management programs: This strategy will be implemented through policy assessment, identification of natural recharge areas and evaluation of artificial recharge projects.
- Promote water recycling: Management and optimization of well field operations will provide the tools to recycle agricultural returns. Use of groundwater not meeting some of the drinking water standards for landscape irrigation and blending for agricultural use will further promote water recycling in the basin.
- Foster conjunctive use. Conjunctive use will be the central management action that serves as the cornerstone for most other activities. The most significant conjunctive use project in the basin is the expansion of the Modesto Regional Water Treatment Plant and its associated storage and delivery systems. This project will reduce pumping by the City of Modesto, improve reliability, and allow the groundwater level in the subarea to recover and reduce the movement of groundwater contaminants. Actions addressing natural and artificial recharge, groundwater

monitoring, well field optimization, and policy assessment will also contribute to the planning and implementation of groundwater conjunctive use.

- Improve water quality: The water quality management, groundwater monitoring and management, and conjunctive use projects (e.g., the expansion of the Modesto Regional Water Treatment Plant and its associated storage and delivery systems to increase surface water use) will improve groundwater basin water quality. Other projects such as the optimization of well field operations will contribute to improving water quality by reducing agricultural returns to the rivers and the Bay-Delta estuary.

- Improve storm water capture and management: Actions supporting public health programs and calling for capturing storm water in dry wells and in natural and artificial recharge facilities will reduce storm water discharges.

Other regional water management elements such as provisions for recreation and river restoration are addressed in planning documents prepared by the participating agencies. Water transfer strategies are considered as in-basin projects to help agencies within the Modesto subbasin meet their water needs. Other strategies such as desalting are not applicable to the region.

8.3 Implementation Plan

The Implementation Plan presents specific management actions that enable the Association to meet the BMOs. The overarching purpose of the BMOs and the associated management action is to encourage a balance of surface water and groundwater use that will protect the resources of the basin and maximize the reliable supply of high quality water to meet municipal, agricultural, and industrial demands now and in the future. The BMOs reflect issues that the participating agencies have recognized as jeopardizing the reliability or quality of local water supplies; the management actions are designed to resolve these issues.

8.3.1 Basin-Wide Recommendations

The following management actions are put forth as recommendations for the implementation of the BMOs:

- Protection of natural recharge areas

- Development of a calibrated, three-dimensional, basin-wide groundwater model

- Feasibility evaluation of artificial recharge projects

- Management and optimization of well field operations

- Identification and feasibility study of conjunctive use projects

- Support of public health programs
- Water quality management
- Groundwater monitoring and subsidence monitoring program
- Policy assessment
- Promoting coordination and cooperation between water entities

The first set of actions responds to basin-wide BMOs. These are followed by agency-specific recommendations intended to support the implementation of each agency's BMOs.

8.3.1.1 Identification of Natural Recharge Areas

Groundwater recharge has diminished because of the expansion of urban areas, and trends in agricultural irrigation practices have reduced deep percolation of applied water. These trends underscore the need to identify and map the remaining natural recharge areas and to use this mapping to protect important sources of recharge. The objective is to develop specific planning actions that offer varying degrees of protection, depending upon an area's significance as a source of recharge. Types of protection could include:

- Programs to educate public and planning entities about the importance of protecting recharge areas.
- Pricing and incentive programs to encourage the continued use of surface water for flood irrigation. Because irrigation of agricultural land is an important element of recharge in the basin, pricing and incentive programs should be promoted.

The first step in implementing this management action would be to identify recharge areas within the cities and the county, to develop a GIS-based map of natural recharge areas, to inform planning entities of the importance of these areas, and to make recommendations for the protection of these areas.

8.3.1.2 Development of a Basin-Wide Groundwater Model

To provide quantitative tools for water resource management in the Modesto groundwater basin, a transient optimization groundwater flow model is being developed. This model can be used to help identify the most effective ways to distribute groundwater pumpage, artificial recharge, and surface water deliveries to meet management objectives during normal and drought conditions. Further data collection and analysis are needed to complete the transient groundwater flow model and develop optimization parameters for the analysis of conjunctive use strategies.

During Phases I and II (Fiscal Years 2002 through 2005) of the Modesto groundwater basin investigations, a "geologic model" and a steady-state regional groundwater flow model were constructed. The geologic model currently consists of the conceptual understanding of the relationship between geologic units in the subsurface (such as the Corcoran clay, the Mehrten formation, and other marker beds), and a three-dimensional spatial interpolation model of "percentage of coarse-grained sediments" was completed, using data from the texture database.

Drilling and installation of multilevel monitoring wells at two sites, collection of continuous core and borehole geophysical logs, installation of continuous monitoring devices, collection of aquifer and slug test data to determine aquifer parameters, collection of borehole velocity logs, and stratigraphic analysis of the newly collected core and cuttings data were performed to address the primary data gaps identified in the interpretation of existing data. The regional groundwater flow model was then updated with the new geologic and hydraulic information obtained during Fiscal Year 2004. Currently, long-term data are being collected and formatted for easy import into the transient flow model in preparation for calibration.

The tasks required to complete this work include the following:

- **Quantify Groundwater-Surface Water Interaction:** Because the Modesto groundwater basin is surrounded on three sides by major streams, it is expected that changes in pumping stress will significantly affect stream flows. Quantitative data on the interaction between groundwater and surface water are needed to constrain the predictions from the groundwater flow model under scenario testing. Reconnaissance monitoring of temperature and salinity will help identify locations for more detailed data collection. Shallow monitoring wells and drive points will be installed at three to five sites and instrumented for water level and temperature monitoring. These data will be interpreted and used to develop parameters and input to the groundwater flow model, using the new MODFLOW stream flow routing package.

- **Investigate Incised Valley Fill Deposit:** An incised valley fill deposit identified beneath the Modesto urban area constitutes a major pathway for groundwater flow and contaminant transport and may enhance natural or artificial recharge in the basin. Reconnaissance mapping of the known extent of the incised valley fill will be followed by drilling, coring, well installation and monitoring, and characterization of hydraulic properties of the incised valley fill sediments. The more detailed data collected on the incised valley fill feature will be interpreted using stratigraphic modeling and incorporated directly into the groundwater flow model.

- **Extrapolation of Process-Level Water Quality Findings to Regional Scale:** Additional wellbore flow and depth-dependent sampling will be done at selected

locations throughout the basin. Flow data will be used to improve the regional groundwater flow model. A suite of water quality samples will be collected to evaluate sources and movement of water in the subsurface, including major ions, nitrate, trace elements, and isotopes.

- **Groundwater Flow Model Transient Calibration:** The results of the groundwater-surface water interaction and incised valley-fill deposit aspects of the investigations will be incorporated into the transient model. The transient datasets collected and organized during the last phase of the investigation will be input to the groundwater flow model using the new "farm" package developed for MODFLOW. This package allows the enhanced use of variables in computing crop demands and allows both semi-routed and fully routed surface water diversions. The model will be "nested" within the recently updated USGS Central Valley model to provide a regional context for the local model. This will reduce the uncertainty along the boundaries and in parts of the model where transient data are unavailable (south of the Tuolumne River).

- **Development of Optimization Parameters and Scenario Testing:** Following calibration of the transient groundwater flow model, the USGS will work with the Association to develop the objectives and parameters for optimization. Depending on what optimization parameters are selected, this may require the collection of additional data to include these variables in the groundwater flow model. Following the development of the parameters, the model will be used to perform scenario testing in close communication with Association needs.

- **Continued Water Level Monitoring:** Continuous water level data will be collected in the newly drilled monitoring wells and the data will be input into the USGS's NWIS database.

The Association and the USGS staff will conduct quarterly reviews to discuss progress and results and to address any issues that have come up during that quarter.

Preliminary interpretations will be shared with the Association at quarterly meetings. A report documenting the transient groundwater flow model will be completed by the end of Fiscal Year 2008 and a final report on optimization and scenario testing will be completed by the end of Fiscal Year 2009.

8.3.1.3 Feasibility Evaluation of Artificial Recharge Projects

The basin-wide water balance, described above, will reveal whether the basin is in overdraft and will illustrate trends in the balance between groundwater recharge and groundwater use. If the water balance demonstrates either that the basin is in overdraft or is likely to fall into an overdraft condition in the near future, two broad options are available for sustaining and protecting basin recharge. The first option is a program to maintain natural recharge by

protecting natural recharge areas; the second is the augmentation of natural recharge through an artificial recharge program.

The evaluation of artificial recharge projects will begin with the mapping of potential recharge sites, which will build on the mapping of natural recharge sites described previously.

The enhanced recharge management action will also develop in-lieu recharge projects. These projects would look at opportunities to reduce groundwater demand by supplying surface water to areas now served by groundwater. Such projects could include incentives for OID and MID irrigators to continue to receive surface water, investigations of annexation options to expand the MID and OID service areas, and water conservation programs or other approaches to ensure the districts' capacity to serve expanded areas. In addition, this management action would continue to support the development and expansion of conjunctive use projects in urban areas with poor groundwater quality (i.e., supplement the City of Modesto's water supply with additional surface water in order to reduce its reliance on groundwater, improve groundwater levels, and reduce the movement of contaminants in the basin) as well as program to evaluate the potential for storm water recharge.

8.3.1.4 Management and Optimization of Well Field Operation

A component of improved groundwater management is the optimization of well operations to accomplish specified management objectives. For example, each well in a well field can be instrumented and controlled so that the group of wells is operated to meet single or multiple objective functions. Examples of typical objective functions are:

- Minimizing the overall costs of pumping
- Maintaining groundwater levels within specified ranges
- Reducing or eliminating well interference where appropriate
- Avoiding the migration of contaminant plumes
- Controlling pumping into irrigation canals in response to delivery and cutoff orders, hence creating opportunities to conserve water by reducing spillage

In addition, well field optimization would support managing the quality of discharged water to be blended with surface deliveries. For example, MID pumps water from the shallow aquifer and blends it with surface water for delivery to agricultural water users. Similarly, urban wells can be used to deliver water to agricultural users when the urban wells fail drinking water standards. The agencies within the basin could evaluate an expansion of the blending program in order to lower the high groundwater table and improve downstream water quality.

Similarly, wells could be optimized and controlled to manage pumping of high nitrate groundwater as a source of irrigation supply.

8.3.1.5 Identification and Feasibility Study of Conjunctive Use Projects

Many of the management actions described above can be viewed as components of a broader conjunctive management program. The goal of this program would be the development of an integrated approach to balancing surface and groundwater use to support the BMOs. Implementation of a conjunctive management strategy may involve reduced groundwater pumping in some parts of the basin and broad controls on pumping to meet groundwater level BMOs.

8.3.1.6 Support of Public Health Programs

Well construction and demolition standards are designed specifically to protect groundwater quality. Management actions to assist local agencies in complying with public health standards include the following components:

- Installation of sanitary well seals on all new wells in accordance with the California Well Standards
- Abandonment of wells in accordance with the California Well Standards

This management action will be particularly valuable in unincorporated areas not served by a water purveyor.

8.3.1.7 Water Quality Management

The protection of groundwater quality is an increasing concern because the basin's population is growing. This management action would proceed by conducting a detailed geologic assessment of the basin that would focus on the areas with poor water quality and identify the sources of the contaminants. This assessment would result in coverage on a GIS system for mapping recharge areas and would be used to develop strategies to control the migration and movement of poor quality water into and throughout the basin.

8.3.1.8 Groundwater Monitoring and Subsidence Monitoring Program

Groundwater monitoring and analysis and the archiving of collected data are needed to implement several of the recommended management actions (e.g., conjunctive management and optimized operation of well fields). In addition, groundwater monitoring will be needed to meet the reporting requirements of the plan. The Association is developing a database to facilitate the storage, retrieval, and archiving of groundwater data. Monitoring data will be important in the development and calibration of the basin-wide groundwater model that will be used to evaluate the effects of proposed projects and management actions.

The Association plans to monitor and measure the rate of inelastic land surface subsidence within the basin. Given the ongoing efforts by Association members to prevent groundwater overdraft and conditions that might lead to subsidence, it appears unlikely that the insignificant subsidence that has occurred historically within the basin will be accelerated. However, the Association plans to monitor and document any future changes in land surface elevations and, if inelastic subsidence is observed, may recommend necessary actions to member agencies.

8.3.1.9 Policy Assessment

Several of the technical management actions introduced above have clear policy requirements and implications. For example, effective protection of natural recharge areas will require coordination and communication with entities responsible for land use policies. Similarly, annexations to expand agencies' service areas as part of an in-lieu recharge program presume clear policies regarding annexation and a process to evaluate the impacts of annexation on groundwater levels and groundwater quality.

The development of consistent policies would be assisted by a regional groundwater forum such as the Association. The purpose of this forum would be to foster coordination and cooperation among participating agencies to manage the Modesto Subbasin and to provide a framework for the formulation of regional projects and programs for the protection and use of subbasin water resources.

For example, given the mutual concern of agencies within the basin regarding the preservation of natural recharge areas and the protection of these areas from pollutants, local agencies could work through the forum to inform one another about land use practices that may contribute to groundwater degradation and the importance of reducing the occurrence of these land use practices.

Similarly, the forum could assist in the formulation of basin-wide water conservation measures including incentive programs, water audits, water metering programs and other measures to reduce demand on the basin.

8.3.1.10 Promoting Cooperation and Coordination Between Water Entities

The Association will continue to coordinate water management activities within the basin and to work cooperatively for implementation of agreed-upon BMOs. The Association will also develop an outreach and educational program to engage other water interests for management of the basin. One example of such outreach will be working cooperatively with industrial water users to improve water levels and water quality in the basin and to reduce localized well interference issues.

8.3.2 Area-Specific Recommendations

The following recommendations for management actions are intended to respond to the specific objectives of each of the management areas.

8.3.2.1 City of Modesto

Groundwater Quality Protection. The foundation of groundwater management is a good understanding of an area's hydrogeology. This project would analyze the transport of contaminants using wellbore velocity profiling and depth-dependent sampling in areas of known groundwater quality problems.

The well field management and optimization program described above would be valuable for managing pumping to reduce or eliminate contaminant movement into and within the basin. The well field management program would include well design criteria detailing the proper spacing and screening of wells to manage groundwater pumping and the movement of contaminants. It could also provide guidance and information needed to avoid siting new wells in areas of known poor water quality.

Groundwater Quality Treatment. The City of Modesto plans to study methods to improve the quality of water pumped from wells that currently experience groundwater quality issues. This investigation would determine, case-by-case, the most economical and effective treatment method for a domestic supply well, based on its location and the type of treatment, such as ion exchange or blending with treated surface water.

Groundwater Levels. To maintain groundwater levels, the City of Modesto plans to work with other planning entities to identify, encourage, and promote measures to protect groundwater recharge areas. The City and other members of the Association have agreed to evaluate the feasibility of groundwater recharge and conjunctive use projects, including the development of artificial recharge areas, in-lieu recharge projects, and surface water-groundwater exchange programs. Implementation of surface water-groundwater exchange programs will entail:

- Increased water treatment capacity and use of surface water to augment groundwater supplies
- Development of exchange programs to mix groundwater of marginal quality with surface water for delivery to agricultural users, golf courses, parks, and other open space areas in exchange for a surface water supply for the City of Modesto

Water Conservation and System Improvement. The City of Modesto, under its Urban Water Management Planning function, will implement water conservation and metering opportunities to increase water use efficiency in its service area.

8.3.2.2 Modesto Irrigation District Management Area

MID plays a major role in the groundwater and surface water management of the Modesto Groundwater Subbasin. MID and TID operate Don Pedro Reservoir and bring surface water for agricultural and urban uses to the basin.

Development of a system-wide well field optimization program would assist MID in managing groundwater levels, protecting groundwater quality, and managing its energy usage. Conjunctive management actions would enable better control of its surface water and groundwater resources, including the exportation and treatment of additional surface water supplies from MID to the City of Modesto to reduce groundwater pumping.

The City of Modesto and MID should work cooperatively to protect the City of Modesto's management area from potential overdraft and the movement of contaminants to the basin and to continue to develop a water exchange program that mixes City-pumped groundwater of marginal quality (as potable water) with surface water and delivers it for agricultural use and to golf courses, parks, cemeteries, and other open space areas in exchange for surface water delivery to the City of Modesto.

MID should also evaluate the feasibility of an expanded blending program and the use of shallow water acquired for delivery to agricultural water users.

8.3.2.3 City of Oakdale Management Area

The City of Oakdale relies solely on groundwater for its water supply. The City's goal is to protect its groundwater levels and quality for a sustainable water supply for its citizens.

Groundwater Levels. The City operates nine wells, two of which were recently constructed. Water levels in some wells are impacted by the production wells at the Hunts and Hershey industrial plants. To protect its groundwater levels, the City could pursue the following options:

- Participate in a well field management and optimization program to determine how its wells can be operated to maximize production, while minimizing the impact from the other wells
- Work with plant managers to minimize impacts during the City's peak water demand period and encourage industrial water conservation
- Work cooperatively with other water entities in the basin to promote and implement conjunctive management programs
- Work cooperatively with other agencies to identify and develop groundwater recharge projects

Groundwater Quality Protection. In the area of groundwater protection, the following actions are recommended for compliance with local objectives:

- Construct a sanitary seal on all new wells and work with other groundwater users within the management area to ensure proper well construction methods are used for all new wells
- Abandon wells within the management area in accordance with the Stanislaus County well abandonment ordinance
- Regularly monitor wells adjacent to industrial areas to detect any potential water quality degradation, and if degradation is detected, consult with the Regional Water Quality Control Board to encourage the implementation of necessary steps to control the migration of poor quality water

8.3.2.4 City of Riverbank Management Area

Groundwater is the only source of water for the City of Riverbank. Currently, groundwater levels and water quality are stable within this management area. To protect the groundwater quality of the management area, the City can take the following actions:

- Develop a monitoring program to ensure that there is no contamination from local industrial facilities. If water quality degradation is detected, consult with the CVRWQCB to encourage the implementation of actions to control the migration of poor quality water in the basin.
- To address its concerns about the operation of a future recharge project and the quality of water used for recharge, work with other water agencies within the basin to ensure that the future recharge project operation will not compromise groundwater quality in the Riverbank management area.

8.3.2.5 Oakdale Irrigation District Management Area

The OID management area is divided between the Modesto Groundwater Subbasin and the East San Joaquin Groundwater Subbasin. About 60 percent of the OID management area is within the Modesto Groundwater Subbasin. However, the issues of the management area north and south of the Stanislaus River are similar and recommended management actions apply to the entire management area. Urbanization within and around the management area has increased groundwater production and the potential for future overdraft. Recommended management actions for OID include:

- Participating in well field management and optimization program to actively manage groundwater production to meet OID's groundwater and energy management objectives.

- Investigating the feasibility of developing conjunctive use and groundwater recharge projects. Determining if groundwater recharge is a viable option to reduce the falling water table within the management area.

- Promoting programs and actions that protect recharge areas within the management area.

- Evaluating the potential benefits of the annexation of adjacent farmland, which relies on groundwater, and its conversion to surface water as part of an in-lieu recharge program. Assessing the effects of this program on aquifer levels and water quality.

- Investigating the impacts of upstream urban or agricultural development on water quality and groundwater levels within OID service area.

8.4 Data Management

To manage the basin's groundwater resources, the Association member agencies regularly exchange information and arrange for uniform groundwater data collection and monitoring to better understand the groundwater basin. In 1998, the Association developed a data collection protocol to standardize the data collection procedures among the member agencies. Data are collected in a coordinated fashion biannually. A copy of the current data collection protocol is provided in Appendix C.

Data management practices already initiated by the Association and its member agencies will be expanded and strengthened during implementation of the IRGMP.

8.5 Annual Implementation Report

Each year, the Association will prepare a report describing the progress made in implementing management activities and the effects of these activities on meeting basin-wide and local management area BMOs. The report will include maps of spring and fall groundwater elevations and tabular summaries of ongoing management actions. The report narrative will present details of implementation activities and describe developments in the basin that are not part of the groundwater management plan implementation but that impact groundwater conditions in the basin (e.g., hydrologic conditions, siting of new industrial facilities, newly identified contaminant plumes).

8.6 Financial Planning for Recommended Actions/Project Implementation

Progress toward the implementation of the IRGMP is contingent upon securing funding to complete the program. Two avenues that are available for funding are grant funding and funds generated internally by the Association members.

8.6.1 Grant Funding

Identified grant funding opportunities include the following:

- U.S. Bureau of Reclamation Challenge Grant Program – The FY 2005 Challenge Grant Program is expected to be better funded than was the FY 2004 program (the program's initial year) and the goals of the FY 2005 program are expected to encourage water conservation and judicious water management.

- CALFED/DWR Water Use Efficiency – This program provides grants for urban and agricultural water conservation projects.

- AB 303 Local Groundwater Assistance Program – This DWR-administered program funds groundwater data collection, modeling, monitoring and management studies, basin management and development of information systems. AB 303 is a potential source of funding for a range of management actions.

- Chapter 8 of Proposition 50, Integrated Regional Water Management Grant Program (administered jointly by the State Water Resources Control Board and DWR) – This chapter funds integrated water management projects that support water quality and water supply security objectives. Chapter 8 is well suited for funding conjunctive management actions.

- Agricultural Water Quality Grant Program – This program, administered by the State Water Resources Control Board, supports baseline monitoring, implementation of management measures, demonstration projects, and effectiveness monitoring. This program has been identified as a potential source of funding for actions that reduce the volume, improve the quality, or control the timing of surface water discharges (such as using groundwater to reduce lateral spillage).

8.6.2 Revenues Through Increased Water Rates

Revenue generated internally by local agencies from the sale of water and power is a second source of funding available for implementation of the plan. Internally generated revenues are important because they are controlled by the member entities and represent a local commitment to plan implementation and establishment of the BMOs. Local financial support is often required by grant programs and by other sources of outside financing. Therefore, while local support may be a factor agencies weigh in establishing budgets and reviewing rates, the willingness of local agencies to contribute to plan implementation is likely to aid agencies in their acquisition of outside funding. Successful pursuit of grant funding will, in turn, enable ratepayers to increase the benefits of their investment.

8.7 Periodic Review of the Integrated Regional Groundwater Management Plan

In addition to the annual reports of implementation progress, there is a need to periodically review and, if necessary, refine the IRGMP. These reviews would be scheduled at five-year intervals and would concentrate on analyzing information presented in the previous annual reports and consolidating the observations of local water managers. The reviews would identify areas where the plan has been successfully implemented as well as areas where deficiencies were apparent. In areas where implementation has proceeded satisfactorily, the plan revision might include increasingly detailed information regarding the specifics of implementation. In areas where progress was less than anticipated, approaches would be discussed to either bring implementation of specific actions back on track or to change course and focus efforts on other actions believed to have a higher likelihood of success.

8.8 Schedule and Implementation Sequence

The Regional Water Management Group discussed in detail the prioritization of project, programs, and strategies. The result of the discussions was the identification of phases instead of a specific priority list. Implementation of the actions recommended in the IRGMP is scheduled in three phases:

- **Phase I-Near Term Projects**: These projects are intended to be implemented within the next three years and include:
    - Management of the well fields: A decision support system to assist the districts to optimize groundwater production from their well fields, based on a set of established objectives.
    - Increase treatment, storage, and distribution capacities and improve system reliability for the City of Modesto.
    - Additional water blending projects: To help agencies meet their water quality objectives while increasing the beneficial use of groundwater.
    - Water conservation projects, including agricultural and urban water conservation projects, and residential water metering programs.
    - Identification of conjunctive use project concepts
    - Rockwell monitoring program
    - Wellhead treatment and remediation projects
    - Development of a calibrated, three-dimensional groundwater model of the basin

- **Phase II-Mid-Term Projects**: These projects are planned for implementation from four to seven years:
  - Identification of groundwater recharge areas.
  - Implementation of wastewater treatment and capacity enhancements.
  - Development of conjunctive use projects.
  - Development of the in-lieu recharge projects, including evaluation of annexation options to reduce groundwater pumping.
  - Ongoing development, enhancement, and optimization of the basin-wide groundwater model.
  - Development of a basin-wide database.
  - Continue water metering implementation and demand management programs.
- **Phase III-Long-Term Projects**: These projects are scheduled for implementation beyond seven years in the future and include:
  - Installation of subsidence monitoring station if needed.
  - Water exchange program.
  - Update water budget.
  - Feasibility evaluation of artificial recharge projects.

Other water management actions may continue throughout the planning horizon, including:

- Association monthly meetings
- Preparation of annual progress reports
- Groundwater monitoring and data sharing
- Coordination and cooperation with water entities, neighboring basins, and state and federal agencies
- Periodic review of groundwater monitoring and groundwater management

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Appendix B
Adoption Resolution

CITY OF OAKDALE PUBLIC WORKS DEPARTMENT
455 South Fifth Avenue • Oakdale, CA 95361 • Ph: (209) 845-3600 • Fax: (209) 848-4344

NOTICE OF INTENTION TO ADOPT URBAN WATER MANAGEMENT PLAN

The City of Oakdale intends to adopt an Urban Water Management Plan in conformance with the Urban Water Management Planning Act. This plan has been designed to ensure the efficient use of available water supplies, evaluate current and projected water supply reliability, describe and evaluate demand management measures, and provide water shortage contingency plans as required by the Act.

SUBMITTAL OF COMMENTS

The public is invited to comment on the draft Urban Water Management Plan. Comments must be received by 3:00 pm December 29, 2008. Any interested party may submit comments to:

Anthony Smith
Oakdale Public Works
455 South Fifth Avenue
Oakdale, CA 95361
Fax: (209) 848-4344
Email: asmith@ci.oakdale.ca.us

PUBLIC HEARING

A public hearing will be scheduled after the close of the public comment period.

IN THE CITY COUNCIL
OF THE CITY OF OAKDALE
STATE OF CALIFORNIA
CITY COUNCIL RESOLUTION 2009-14

RESOLUTION OF THE CITY OF OAKDALE CITY COUNCIL ADOPTING THE 2009 URBAN WATER MANAGEMENT PLAN

THE CITY OF OAKDALE CITY COUNCIL DOES HEREBY RESOLVE THAT:

WHEREAS, the Urban Water Management Planning Act of 1983 requires each water provider that serves 3,000 or more customers to develop an Urban Water Management Plan; and

WHEREAS, this document will serve as an important planning tool for the water department; and

WHEREAS, this document will help the water department continue to provide high-quality drinking water to the residents of Oakdale; and

WHEREAS, comments of the draft 2009 Urban Water Management Plan were solicited from the public and interested agencies and no comments were received; and

WHEREAS, the City Council reviewed the proposed 2009 Urban Water Management Plan at a regular meeting on February 2, 2009; and

NOW, THEREFORE, BE IT RESOLVED that the **CITY COUNCIL** hereby adopts the 2009 Urban Water Management Plan.

THE FOREGOING RESOLUTION IS HEREBY ADOPTED THIS 2nd DAY OF FEBRUARY, 2009, by the following vote:

AYES:	COUNCIL MEMBERS:	Brennan, Dunlop, Jackson, Morgan
NOES:	COUNCIL MEMBERS:	None
ABSENT:	COUNCIL MEMBERS:	Hanson
ABSTAINED:	COUNCIL MEMBERS:	None

Farrell Jackson, Mayor

ATTEST:

Nancy Lilly, City Clerk

Appendix C
City of Oakdale Water Conservation Ordinance

ARTICLE VI. WATER CONSERVATION PROGRAM.

Sec. 35-47. Purpose.

The purpose of this article is to provide a comprehensive water conservation program through limitations on water usage and through public education. Landscaping systems shall be properly designed, installed, maintained, and operated to prevent the wasting of water. The use of drought tolerant landscaping shall be encouraged. Serving water in restaurants only upon customer request shall be encouraged. (Ord. No. 982.)

Sec. 35-48. Water waste not permitted.

Water service customers shall not be permitted to waste water.

(a) Acts constituting water waste shall include, but shall not be limited to, any of the following acts:

(1) Failure to comply with the following schedule when watering lawns, plants, or garden, or using outdoor water for other purposes:

a. No lawn/garden watering, or other outdoor use will be allowed between the hours of ten a.m. to seven p.m. every day.

b. Dwellings or establishments with odd numbered street addresses shall use outdoor water only on Mondays, Wednesdays, Fridays and Sundays.

c. Dwellings or establishments with even numbered street addresses shall use outdoor water only on Tuesdays, Thursdays, Saturdays and Sundays.

(2) Watering lawns or gardens such that excess water leaves the property or area being watered;

(3) Watering outdoor landscaping while raining;

(4) Washing vehicles, equipment or boats, during restricted days or hours; and/or using hoses without automatic shut-offs;

(5) Hosing down of concrete or asphalt curbs, gutters, sidewalks, driveways or slabs;

(6) Having leaky faucets or plumbing fixtures on the premises. (Ord. No. 982.)

Sec. 35-49. Administration of program--Penalties.

(a) Should the department of public works determine that any water service customer, or person using the water services with the consent of the customer, has committed acts which constitute the wasting of water as provided herein, the water service customer shall be served, either personally, by mail, or by posting at the residence or business premises of the customer, with a Notice of Ordinance Violation stating the acts or conduct which constitute the wasting of water, and notifying the customer of the penalty fees assessed for further violations.

(b) Should a water service customer, or person using the water services with the consent of the customer, violate the provisions of this article regarding water wasting, after being served with two Notices of Ordinance Violation, then such water service customer shall be served with a Notice of Intention to Impose a Fee for Water Wasting. Said notice shall:

(1) Identify the date, time and circumstances of the violation.

(2) State the amount of the fee to be imposed.

(3) Advise the customer of his appeal rights as provided herein.

The Notice of Intention to Impose a Fee for Water Wasting shall be served in the same manner as the Notice of Ordinance Violation as provided herein.

(c) There shall be assessed to the water service customer's account a penalty fee in the sum of fifty dollars for a first violation within one year after being served with the Notice of Ordinance Violation. A second violation within said one year period shall result in a penalty fee of seventy-five dollars; and upon a third such violation within the one year period a penalty fee of one hundred dollars shall be assessed. Any additional violations within the one year period shall be assessed at two hundred dollars each.

(d) A water service customer shall have the right to appeal either the Notice of Ordinance Violation or the imposition of any penalty fee assessed to his account for water wasting. The appeal hearing shall be held before the director of public works or his designee, who shall make the final administrative determination regarding the matter. The customer shall be allowed to present such witnesses and evidence as he may desire and may be represented by an attorney or other representative of his choosing. The city may be represented by the city attorney or his designee.

The water service customer must request an appeal hearing in writing within fifteen days from the date of service by the Notice of Ordinance Violation; or in the case of the imposition of a penalty fee, within fifteen days of the service of the Notice of Intention to Impose a Fee for Water Wasting. The request for hearing shall be addressed to the director of public works and shall be deemed served only when received by the city. Failure to properly serve the request for hearing within the fifteen day period shall be deemed a waiver of the right to appeal the matter and the penalty fee will be assessed against the customer's account.

The hearing officer shall give written notice by mail to the water service customer of the date and time of the appeal hearing, which hearing shall be held not sooner than

ten days from receipt of the request for hearing and not longer than thirty days. The decision of the hearing officer shall be final. If the violation is upheld, the penalty fee shall be assessed to the customer's account.

(e) Any water service customer without a water meter who has been assessed three or more penalty fees within a one year period may be required to install a water meter upon the premises and the customer shall be required to pay the reasonable cost of the water meter and its installation.

(f) Failure of any water service customer to pay the penalty fees imposed as provided herein or to pay for the cost of a water meter and its installation as required shall be grounds to discontinue water service until compliance is obtained.

(g) The city council does hereby designate the water supervisor, any maintenance worker assigned to the water division of the Oakdale Public Works Department, and any water conservation officers appointed by the director of public works as the persons authorized to investigate violations and to serve any notices required by the provisions of this Article VI. (Ord. No. 982.)

Appendix D
Sample Water Shortage Contingency Resolution and Plan

IN THE CITY COUNCIL
OF THE CITY OF OAKDALE
STATE OF CALIFORNIA
CITY COUNCIL RESOLUTION 2008-__

RESOLUTION OF THE CITY OF OAKDALE CITY COUNCIL AUTHORIZING THE PUBLIC WORKS DIRECTOR TO IMPLEMENT AN EMERGENCY WATER SHORTAGE AND CONSERVATION PLAN

THE CITY OF OAKDALE CITY COUNCIL DOES HEREBY RESOLVE THAT:

WHEREAS, the City of Oakdale places great importance on continuing to provide its residents with clean and safe drinking water; and

WHEREAS, the City currently faces a shortage of water; and

WHEREAS, in order to provide clean and safe drinking water to the residents of Oakdale it is necessary to implement an emergency water shortage and conservation plan ; and

WHEREAS, the Public Works Department is in a unique position to help alleviate some of the problems associated with a water shortage; and

NOW, THEREFORE, BE IT RESOLVED that the **CITY COUNCIL** hereby authorizes the Public Works Director to implement an emergency water shortage and conservation plan in accordance with the Chapter 35 of the Oakdale Municipal Code to be reviewed every month by the Council until such emergency shortage ends as declared by the City Council.

THE FOREGOING RESOLUTION IS HEREBY ADOPTED THIS DAY OF , 2008, by the following vote:

AYES: COUNCIL MEMBERS:
NOES: COUNCIL MEMBERS:
ABSENT: COUNCIL MEMBERS:
ABSTAINED: COUNCIL MEMBERS:

Farrell Jackson, Mayor

ATTEST:

Nancy Lilly, City Clerk

Water Shortage Contingency Plan

Step 1: Stages of Action

Livermore Municipal has made some minor changes for this 2005 update of the Water Shortage Contingency Plan. The basic plan continues to be similar to the plan adopted in 1991 and updated in 1996. The 2005 update follows the new State Guidebook formats that were prepared by the Department of Water Resources in January 2005. This water shortage plan includes new information about changes since 1996, but does not rescind the prior plans. The four major stages of action are shown in Table A below. Each stage will show a shortage, a demand reduction goal, and a program type.

Water Supply Shortage Stages, Conditions, and Restrictions - Table A

Stage	Shortage	Demand Reduction Goal	Type Program
Stage I	0%	0% reductions	No Restrictions
Stage II	0 - 25%	25% reduction	Voluntary or Mandatory
Stage III	25 - 35%	35% reduction	Voluntary or Mandatory
Stage IV	35 - 50% +	50%+ reduction	Voluntary or Mandatory

Priorities for use of available water, based on California Water Code, Chapter 3 and community input are:

1. **Health & Safety** - interior residential and fire fighting
2. **Commercial, Industrial & Governmental** - maintain jobs and economic base
3. **Annual Crops** - protect jobs
4. **Existing Landscaping** - especially trees and shrubs
5. **New Demand** - projects without permits when shortage declared

If there is a supply shortage, the initial reduction would be in the Stage II range or 0 - 25%. This category would most likely be used to handle a shortage during the peak summer demands from May to September. If the water supplies are reduced greater than 25%, the Stage III declaration would be made. If the conservation level was not attained on a voluntary basis, a mandatory declaration would have to be made. If additional water conservation is necessary, a Stage IV level will then be implemented. As was the case with the Stage III declaration, the water customers will be first given a chance to attain the 50% reduction on a voluntary basis. If the voluntary 50% reduction is not attained, a mandatory reduction will be required. Any increased level of conservation will only be made after all of the efforts are exhausted at the prior level.

Supply Shortage Triggering Levels:

Zone 7 has a number of additional sources of supply since the 1995 plan. The three old sources – State Water Project (SWP), Arroyo Valle Water Rights, and local groundwater are now enhanced by six water transfer amounts. These were discussed in Section 2. At this time, the only anticipated shortages would be from the SWP and local runoff. Depending on the amount of reduction from the SWP, up to 75% reduction can be made up by increased pumping of the existing groundwater wells. For reductions in excess of 75%, the water transfer amounts can be called into play. These details are explained in great detail in Zone 7's UWMP. According to current information, Livermore Municipal's water source is more secure today than in 1995. Conservation stages may be triggered by a shortage or a catastrophic situation. Shortages may trigger one stage at any time, but most supply reductions will have taken place by May 1st of each water year. The specific criteria for triggering the City's conservation stages are in Table B below and include the need of Zone 7 to make a finding for reduced water deliveries. Once an announcement is made for reduced deliveries, Livermore's City Council will adopt a resolution setting the appropriate stage of water conservation.

Water Supply Triggering Levels (Normal Supply 7,108 AF for 2005) - Table B

Stage	Percent Reduction Needed	Water Shortage "Trigger"
I	No Reduction Required	None
II	0 to 25 percent supply reduction	Supply reductions totaling up to 1,777 AF
III	25 to 35 percent supply reduction	Supply reductions totaling between 1,777 and 3,554 AF
IV	35 to 50%+ percent supply reduction	Supply reductions totaling 3,554 AF or more

Step 2: Estimate of Minimum Supply for Next Three Years

Due to excellent planning by Zone 7 and the four water retailers, there does not appear to be a three year period that the potential supply will not match the anticipated demand. See Table C below.

Three Year Estimated Minimum Water Supply -AF/Y - Table C

Source	Normal	2006*	2007*	2008*
Zone 7 Water Agency	**7,108**	**5,331**	**4,620**	**3,554**
Possible % Reduction	**0%**	**25%**	**35%**	**50%**
Per Zone 7 UWMP	**7,108**	**7,370**	**7,594**	**7,819**

*** 3 Driest Year Period – 1990-1992**

Step 3: Catastrophic Supply Interruption Plan

As shown below, there are a number of incidents that can cause a catastrophic supply interruption. The easiest to plan for is the regional or area power outage. Other supply interruptions could be caused by an earthquake or large scale water leaks. The large water leaks can be in three important locations. The first can be between the SWP and Zone 7. The second can be a Zone 7 pipeline to the City and the third can be a Livermore Municipal major supply line. Flooding was an emergency that was considered, but was determined to be not entirely possible. The only flooding scenario that was possible was the failure of the Lake Del Valle Dam. The failure of the dam and associated flooding would still not affect Livermore Municipal's water facilities, only those of our neighbor California Water Service. If flooding occurred in their service area, we could assist them through our three emergency interconnections.

Preparation Actions for a Catastrophe

Possible Catastrophe	Summary of Actions
Regional Power Outage	**All major pumping stations have emergency generators. Control center also backed up.**
Earthquake	**All responses would be per our Emergency Action Plan.**
Water Supply Outage	**Reduced consumption mode. Reassess on a regular basis depending on size of outage.**

Regional Power Outage – Three of Livermore Municipal's four pump stations have emergency generators for power outage situations. The fifth station that is under construction will also have an emergency generator when completed. The water telemetry center at the wastewater treatment plant also has emergency backup power.

Earthquake – Livermore Municipal Water in our Emergency Action Plan addresses earthquakes as possible emergency situations. In this action plan most of the earthquake related possibilities have been discussed and taken into consideration.

Water Supply Outage – Depending on information from Zone 7, Livermore Municipal would immediately put one of the emergency plans into action. If the South Bay Aqueduct (part of SWP) was damaged, it is possible that a limited amount of water would be available in the Patterson Pass Treatment Plant fore bay and additional water could be taken from Lake Del Valle. If a Zone 7 pipeline was damaged, water could be networked around the valley and around the leak. These possibilities and more are outlined in Zone 7's UWMP, page 54. If a Livermore Municipal pipeline was damaged or leaking, an alternate supply path would be created through the supply network.

Step 4: Prohibitions, Penalties, and Consumption Reduction

The City adopted a Water Conservation Plan that addressed the "No Waste" aspect in 1991, updated in 1996, and is currently in effect in 2005. Even though the plan is always in effect, a level of conservation higher than Stage I is not enacted until a water shortage declaration by Zone 7. See Appendix A for the specific plan.

Mandatory Prohibitions

Under Livermore Municipal's conservation plan, none of the items listed in the plan are mandatory. If the level of conservation needed is not attained by a single customer, business, or area, additional conservation assistance such as flow restrictors may be installed if needed. Additionally, if all of the available conservation measures are undertaken and the conservation level is still not attained, a finding is made that converts the voluntary measure into a mandatory measure.

Consumption Reduction Methods

All of the consumption reduction methods approved for Livermore Municipal are listed in the Water Conservation Plan in Appendix A.

Penalties and Charges

The greatest penalty currently available is a financial one. The first finding for necessary water conservation could be at a Stage II, Stage III or a Stage IV level. At these advanced stages, the cost for none essential water increases greatly over the normal Stage I rates. Livermore Municipal's current Stage I declining block rate schedule is in the following table (as of 7/1/04). For the current rates for Stages II, III, or IV, check Resolution 2004-119 in Appendix A which shows all four conservation stages and rates.

Current Stage I Rate Structure (normal)

Tier	Rate	Tier	Rate
Residential		Commercial	
0 - 500 cubic feet	$ 1.671/HCF	0 - 5000 cubic feet	$ 2.004/HCF
500 - 3500 cubic feet	$ 2.004/HCF	All over 5000 cubic feet	$ 3.101/HCF
All over 3500 cubic feet	$ 3.101/HCF		
Public Agency			
All water used	$ 2.004/HCF		

Service may be terminated to any customer who knowingly and willfully violates any provision of this Water Shortage Plan or the Water Use Reduction Plan. If a customer exceeds the allotted usage (as defined in the Reduction Plan) for three consecutive billing periods, the City may install a flow restrictor at the water meter which reduces the water flow to the customer as outlined in the monitoring section of the Plan and as follows:

Third consecutive and subsequent consecutive violations:

The City may install a flow restricting device of 5 gallons per minute capacity for residential and a 20

gallon per minute capacity for commercial services for a period of seven days. The customer must pay a flow restrictor installation and removal charge of $100 before the normal service will be restored.

Step 5: Analysis of Revenue Impacts of Reduced Sales during Shortages

In 1991, the City (Livermore Municipal) adopted a Water Use Reduction Plan. When this Reduction Plan was adopted, a new staging of water rates was created. The water rate schedule that was adopted in 1991 included the four stages of rates that corresponded to the four stages of water conservation that was a part of the Water Use Reduction Plan. This is an important fact since the staged rates were calculated to enable the Livermore Municipal to sell less water because of the drought, but still maintain enough revenue for the water operations to continue without financial problems. When the drought ended in 1992, the staged water rates with the declining block did not. In 2005, even though the overall water rates are higher than they were in 1991, the fact that there are still four separate stages of increasing water rates allows Livermore Municipal to plan for a water shortage without the problems of inadequate revenue for the day to day business.

The impact of reduced water sales during a water shortage is annually calculated to have very little impact on the financial stability of the Water Enterprise because of the rate structure created by the four staged rates. In Appendix A are all of the water related plans that had their beginnings in 1991and the corresponding current rate schedules for 2005. There are currently no plans to do away with the declining block or staged water rates in the future.

Step 6: Draft Ordinance and Use Monitoring Procedure

Attached to this section is the draft resolution to adopt the Water Shortage Contingency Plan

Water Use Monitoring

Normal Monitoring Procedure:

In normal water supply conditions, purchase and sales data is checked monthly. These totals are reported when asked for to the Water Resources Manager or the Public Services Director. The totals are also logged into the annual report to the Department of Water Resources.

Stage II Water Shortage:

During a Stage II water shortage, weekly turnout readings are reported to the Water Supervisor. The Supervisor compares the weekly purchase to the weekly target to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Resources Manager, Water Shortage Response Team, and the Public Services Director. Monthly reports are also sent to the Public Services Director. If reduction goals are not met, the Manager will notify the Public Services Director so that corrective action can be taken.

Stage III and IV Water Shortages:

During a Stage III or IV water shortage, the procedure listed above will be followed, with the addition of a daily water purchase report to the Water Resources Manager.

Disaster Shortage:

During a disaster shortage, purchase meter readings can be reported to the Supervisor hourly, if needed. These water purchase amounts will be forwarded to the Water Resources Manager and the Water Shortage Response Team daily. Reports will also be provided, if necessary, to the Public Services Director and the Office of Emergency Services.

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